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LIGHT • HEAT • POWER • BYE-PRODUCTS

[Founded in 1849 as the "Journal of Gas Lighting."]

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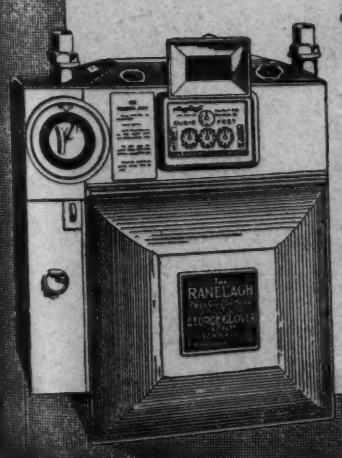

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VOL. CLXVIII., No. 3207.] WEDNESDAY, OCTOBER 29. 1924. [76TH YEAR.

EDITORIAL NOTES.

A Low-Temperature Carbonization Test.

THE Fuel Research Board announced some time ago that they were prepared to make, at the public expense, tests of plants for the low-temperature carbonization of bituminous coal. But, very properly, Dr. C. H. Lander, the Director of Fuel Research, says: "It should be clearly understood "that no attempt is made to pronounce on the commercial "possibilities of plants which may be tested." What the Board decline to do, interested people can, it appears, readily accomplish on the results of the Board's tests, and perhaps in more ornate language than Dr. Lander or members of his staff would employ. Last week a report was issued by the Department of Scientific and Industrial Research on a test by the Director of Fuel Research on a Parker low-temperature carbonization plant at Barugh, Barnsley, the works of Low Temperature Carbonization, Ltd. Immediately the report was issued, the "News Editors" of many papers received from that Company what was described as a "short summary" of the report; but it included something more. It was headed: "Fires without Smoke: An Aston-"ishing Government Report." Then it stated that "a dramatic development in the smokeless city movement is officially provided by the report of the Fuel Research Board." The "summary" tells us how "Government engineers and chemists took possession of the Barugh plant for two days," and what products they obtained from dry coal—the results on the dry-coal basis being, of course, somewhat better than with the coal as charged with 5·2 p.ct. moisture. There follows the experience of certain bags of coke on a journey between Barnsley and the Fuel Research Station, which showed that the coke is less friable than was formerly the case.

But in the "summary" as sent out by Low Temperature Carbonization, Ltd., there is a paragraph for which we can find no justification in the report, and therefore it should have been made perfectly plain that the statement did not originate with Dr. Lander. It reads: "As small coal and "slack, both at present wasted, are actually preferred for "the retorts, the process is *much cheaper than treatment in "ordinary coking retorts, or in carbonization at high temperature "for gas manufacture.* The incidental provision of between "18 and 20 gallons of crude oil and 2 gallons of motor spirit "for each ton of coal indicates that the multiplication of "units to carbonize all the coal in the country at the pitheads "might effect a *sensational* change in our present practice of "importing practically all our supplies of spirit for motor "cars and oils for the Navy." The italics in the quotation have been applied by us to emphasize statements for which we are sure Dr. Lander would not hold himself responsible, but which have been imported, for commercial—perhaps financial—reasons, by Low Temperature Carbonization, Ltd., into what purports to be a "summary" of the report. Whatever the reason, the statement is really a misrepresentation of the contents of the report, and should be repudiated by the Director of Fuel Research.

As to the report itself, part of the good results disclosed by the tests are due to the excellent quality of the coal used. It was Dalton Main coal, clean and of uniform quality. It only contained between 4·44 and 5 p.ct. of ash; moisture was low—2·3 to 2·7 p.ct., or as charged 4·3 to 5·72 p.ct.; and the volatile matter was 35·42 to 36·2 p.ct. The products obtained per ton of coal as charged into a 50-ton per day unit of plant were: Coke, 13·92 cwt.; gas, 5620 c.ft., or 39·6 therms; tar, 18·62 gallons; liquor, 26 gallons; crude spirit, 1·78 gallons; sulphate of ammonia, 13·55 lbs. We agree with the statement in the report that these results "may be regarded as very satisfactory." But nothing is said about the cost of operation, which, of course, is a matter that does not come within the province of the Fuel Research Board. In this connection, however, it is seen that no less than thirteen men were provided for the handling of the 50-ton unit. Dr. Lander is apparently struck by the amount of labour employed, as he makes the remark that "the labour is undoubtedly more than enough for one such unit, and could be greatly reduced by the application of mechanical devices." Thirteen men for such a unit of plant would be rather costly. The next point which invites comment is the fuel supplied for heating the setting. For this purpose the yield of 705 B.Th.U. coal gas was employed mixed with 104 B.Th.U. producer gas. The report states the consumption in rather an unusual way—viz., the therms supplied per hour to the setting. The supply was 83·5 therms. If we multiply the 83·5 therms by 24 hours, and divide by 50 tons, it is found that the therms used as fuel are equal to 40 per ton of coal. As only 39·6 therms of gas are made per ton of coal, there is no gas remaining for sale. This is not good for the balance-sheet; and it is very extravagant. It is patent that, in respect of heating, the designers of the plant have not yet realized perfection. It is seen that the temperature of carbonization was not uniform throughout the setting—varying from 600° C. to as high as 800° C. Such a high temperature is unnecessary; and certainly there ought not to be such a variation as 33·3 p.ct. between the lower and the higher temperatures. The excessive fuel consumption is attributed to this high temperature, to insufficient heat insulation, and to badly designed combustion chambers. The widely differing temperatures show that the structural details still require modification by an expert brain. One other point. It used to be claimed for coalite that it contained 7 or 8 p.ct. of volatile matter; but in this test the average of four samples was 4·2 p.ct.—one sample contained as low as 3·51 p.ct., and the highest content was 4·63 p.ct. This is evidence, the coal being the same, that the charges were not all being carbonized to the same extent. However, when the coke was burned in a grate, a good hot fire resulted, but there was less flame than is given by the coke cakes manufactured at the Fuel Research Station. With the low content of volatile matter this was to be expected.

There is not much in the report which calls for comment. It is mainly a statement of facts derived from the test, with the disclosures which show that the design is not all that it should be for the realization of the highest heating efficiencies combined with temperature uniformity. The document does not price out the products; but anyone can make an approximate estimate of the values per ton, remembering that in this case the whole of the heat of the gas is required in the carbonization process, so that it is not available for sale. The products being obtained from washed Dalton Main coal, the labour being what it is (and capital and maintenance charges cannot be light), the commercial aspects of the proposition do not at present strike one with any greater favour than they did a few years ago. It is the financial result that is the real test, and not alone the quantity of products from a particular class of coal.

Restriction in Exceptional Circumstances.

THE Ministry of Health have taken a step which, on first blush, looks as though they are acting *ultra vires* the Gas Regulation Act; and without some explanation there might be resentment in the gas industry over what appears to be an uncalled-for departmental interference with the declara-

tion liberty in respect of calorific value conferred upon gas undertakings by the Act. It may be said at once that the action taken in an individual case does not by any means represent a settled policy on the part of the Ministry in regard to calorific value, or the increase of carbon monoxide due to the mixture of water gas with coal gas. A municipal undertaking applied to the Ministry for sanction to a loan for a contemplated water-gas plant. With the application there was compliance by the Ministry, "on the condition that the calorific value of the gas supplied, when it contains a proportion of water gas (in cases of emergency or otherwise), will not be allowed to fall below 500 B.Th.U." The Ministry have power to sanction or refuse loans; and in the circumstances they might possibly have refused the loan had the condition as to calorific value not been inserted, which was not done until after consultation with the Board of Trade. Moreover, there is no information as to whether the undertaking in question has yet come under section 1 of the Act. However, it is obvious that the minimum calorific power being placed at 500 B.Th.U. when a proportion of water gas is being distributed points to a desire to restrict the percentage of carbon monoxide in the gas. In view of the reports and decisions that have been arrived at in respect of this matter, the gas industry is as strongly averse to anything being done which will affect their position or create a precedent in respect of carbon monoxide, as it is of anyone over-riding its statutory right of determining the calorific value of gas, within the terms laid down by the Act. The Act does not impose any conditions as to restricted liberty in the making of declarations in any circumstances. The simple explanation of the matter is that the undertaking in question is situated in a mining area; and therefore the actual leakage of gas is very heavy—being anything between a quarter to one-third of the gas made. We think it may be taken that solely because of this the Ministry considered it unwise that the undertaking should be left absolutely unfettered in respect of the character of the gas to be distributed. Having regard to the facts, perhaps this is not unreasonable, so long as it is not made to serve as a precedent. If the undertaking is not already under section 1, we wonder what would happen if application were now made for an Order. Could any department deprive it of the rights which Parliament has decreed it shall possess?

The Braithwaite Appeal Won.

Directors who are members of municipal bodies with whom the company or firms with which they are identified have contracts will, on first blush, be thankful that Mr. Albert Braithwaite, of Leeds, has won his appeal against the decision of the late Mr. Justice Bailhache in the case of *Lapish v. Braithwaite*. But deeper consideration will show that the new decision leaves matters very much in doubt as to the general position of councillors and aldermen who hold ordinary directorial positions in business concerns with contracts running with the municipal body. The Court of Appeal was constituted of Lords Justices Bankes, Scrutton, and Atkin. The two former were favourable to the appeal of Mr. Braithwaite, and the last-named supported the decision of the learned Judge in the Court below. In all probability the case will go to the House of Lords. The decision in favour of the appellant appears to rest on distinctions that are too fine to have general application. In fact, Lord Justice Bankes expressly stated that his decision must be confined to cases where the facts are similar to the present one, and where no charge of misconduct or bad faith is made against councillor or alderman. That is satisfactory so far as it goes; but it does not go far, or rather is not very comprehensive. Mr. Braithwaite is a Managing-Director as well as a shareholder in the Company with large contracts with the Leeds Corporation. Some importance appeared to be attached to the fact that Mr. Braithwaite is paid a fixed salary as Managing-Director; and Lord Justice Bankes could not read the language of the statute as being aimed at, or as including, the officials or servants of companies who are paid fixed salaries. The decision therefore does not seem to throw much light on the position of the ordinary directors of a company having contracts with a public body of which the directors are members.

Their Lordships referred to ancient Acts of William IV. and Victoria which the 1882 Act repealed. Looking at the earlier Acts and the later one, it appeared to Lord Justice Bankes that the Legislature had sought not to tighten up the disqualification; on the contrary, it was always increasing the exemptions. "The necessary inference," said his Lordship, "from the historical survey of the legislation "seems to be that the Legislature recognized that, having "regard to municipal life, to the importance of securing the "services of the prominent persons in a municipality as "members of the local authority, and to the conditions "affecting businesses and business people in the municipalities, it was necessary, in spite of the opportunities "which might be given for malpractices, to relax to a very "considerable extent the stringency of the original disqualifying provisions." It was with these views in mind that his Lordship approached consideration of the material section; and he made a critical examination of what constitutes "interest" in a contract within the meaning of the section. Into this we cannot enter here. However, reading the judgments, one cannot help feeling that, even if the decision of the Court of Appeal is upheld or not further disputed, it still leaves the matter in a state of uncertainty, in view of the judgment being confined to cases where the facts are on all-fours with the Braithwaite one. In the public interest, it would be an excellent thing if Parliament would amend the Act, and put into explicit language exactly what is intended. It is manifest that the ambiguity of the section of the 1882 Act in question defies any unanimous interpretation of it by skilled lawyers and judges.

Lessons of the Examinations.

Lessons usually precede examinations; but examinations also produce lessons. In our issue for Oct. 1 (p. 33), there was a memorandum prepared by the Organizing Secretary of the Institution Education Scheme (Mr. Walter Hole) from the Examiners' report to the Advisory Committee. There are lessons in that document. In our issue of Oct. 15 (p. 178), there were the reports of the Examiners in the City and Guilds of London Examinations in Gas Supply and Gas Fitting—respectively Mr. H. Kendrick and Mr. R. J. Rogers. There are lessons in their reports. We are all agreed as to the need for higher education in the gas industry; there must also be agreement that it is the duty of every responsible individual in the gas industry to do his part to facilitate the raising of the standard of education and training, and, in fact, to insist upon it. It is one thing to say this is a good thing, and to have plans embedded in a scheme. The matter does not end there. Every responsible administrator and official is the centre of a circle of influence in this vital matter, and that influence he should exercise to the full. We have carefully read the memorandum and the reports with the view of obtaining impressions; and they have been obtained. Were it not that the policy of a higher standard of education and training is merely in its first stage of practical working, we should have been inclined to say that certain parts of the memorandum and reports had occasioned us a little amazement. However, when the Institution educational scheme was first launched, it was intimated by Mr. F. W. Goodenough and Mr. Hole in various speeches that, should experience dictate, there could be improvement in detail, without affecting the principles on which the scheme was founded. There have been certain easily negotiated changes (as indicated in the memorandum); but the first examinations have projected upon notice places where there should be improvement in the educational methods.

This is largely a matter for the teachers and the candidates themselves, if there is to be complete value derived from the scheme and the examinations. We agree that the number of candidates who sat for examination—60—is satisfactory, having regard to the fact that this was the first year. Where there has been failure, the memorandum tells us, is that the candidates as a whole have not fully realized the standard required of them for success in the examinations. We are not disposed at this stage to concentrate the blame for this wholly on the candidates, but would rather distribute it between them, the teachers, and the methods they employ. In the "Memorandum," there is explanation as to what is required of the candidate to secure the distinction for which he sits—whether in the ordinary, the higher, or the diploma stage. We will not dispute that the examinations are of a critical and searching nature; but, as said on a previous occasion, not more so than the need of the industry warrants. There has never before been a thorough investigation of the technical knowledge of candidates for official position in the industry; and it is a good thing that it has come. The need for higher qualification being ad-

mitted, the necessary tests must be applied to see that it exists; and the individuals who possess it should have, and must have, preference in selection for appointments.

When we come to a consideration of how the requirements have been met by the candidates in the first examinations, the lessons for candidates, teachers, and all responsible for the well-being of the industry present themselves. The first point is the marked difference between the candidates themselves, classified as "internal" and "external" students. The former are the college-trained men. In their case the quality of work in the examinations is reported as having been "generally good;" from one college, the sketches, phrasing, and writing of the candidates were "exceptionally good." Such commendation is an encouragement to college authorities and teachers. But there is a point educational authorities must mark, and legislate for, with a view (in order to perfect the educational work) of altering an ascertained state in their students. The report says that a weakness of the internal students, revealed to some extent in the engineering papers, but still more so in the answers to the supply questions, is the absence of individual thought and expression. There was marked ease on the part of the internal students in tackling questions; but there was remarkable similarity in the replies from the same centre which made it difficult to discover independent thought or to assess the grasp of the subject possessed by the candidate. The last thing that the authorities of our colleges want is to be responsible for a stereotyped product. The examinations are already proving, as might have been expected would be the case, the superiority in knowledge of young men who have had the advantage of a theoretical and scientific training; but the examination work shows that those who teach must give heed to the cultivation of greater individual thought and expression. There should be no difficulty about that; it only requires some addition to the training system for a young man with brains to acquire the habits of individual thought and expression, which are essentials to the engineer and manager, who must not rely solely on theoretical principles, formulæ, and the slide-rule.

Of course, the college-trained man does not become competent until practical experience has been combined with the theoretical and scientific education, although in some training centres now a fair amount of practical experience can also be obtained. But we are here dealing with education and examinations; and there is now the case of the "external" students. We are sorry to see that the examinations have revealed serious deficiencies among them. There has, it seems, been a failure to realize that a higher standard of knowledge and work must be demanded if certificates and diplomas are to have a value which cannot be disregarded. This must be borne in mind, together with the intimation of the examiners that it is their intention in future to combine a demand for chemical, physical, and general knowledge of a higher order than was found in the questions set last year. This all indicates that the "external" student lacks something of which the "internal" student has become possessed—something that is necessary to gain the highest honours in the industry. The question for the external student is: How are the deficiencies best to be rectified? In our opinion, this can only be done by a greater regional concentration upon educational facilities which will enable the "external" student to gain the advantages which the internal student has, and which enable him to show higher qualification. The examiners supply an indication as to the seats of weakness on the part of the "external" students. Generally speaking, there was a feebleness in drawings and illustration; the art of logical and lucid expression is wanting; and greater attention to ancillary subjects is necessary. The statement should be particularly marked, that, except in the case of the two candidates who were awarded diplomas, the theses presented by candidates did not reveal evidence of independent thought or a firm grip of underlying scientific principles. If this can be said of those who felt themselves competent to take the higher examination, and to win the most coveted distinction, how much more will it apply to the other external students who sat for the lower examinations? This, as we say, must be altered by more being done to provide for filling the blanks in educational facilities for "external" students; otherwise we can see that many who are worthy and earnest will be left behind in the race for the attainment of the standard of knowledge and qualification which the best brains in the industry deem to be necessary for its future.

We find much the same thing, though on another scale, in the reports of Mr. Kendrick and Mr. Rogers on the Gas Supply and Gas Fitting Examinations of the City and Guilds of London. Take the former—Mr. Kendrick says that in the ordinary grade there has been a considerable improvement on the previous year's work; but in the final there was a considerable falling-off. If we are aiming for a higher standard of qualification through all grades of employees, that statement by the examiner is the direct opposite of the condition which is desired. Mr. Kendrick attributes the deficiency to the students being badly prepared. That is no doubt partially the case; but when we read that the standard of general knowledge revealed by the candidates was higher among those who obtained a pass, but much worse among the others, this indicates that there is also a vast difference in the degree of application and capacity on the part of the candidates themselves—particularly having in view the lower stringency of these examinations contrasted with those of the Institution. Candidates, if they require any spur, will find it in the reflection that the gas industry is now beginning the salutary work of finding out who are live men and who are drones; and as progress is made, there will be no muddling through to the appointments worth having. They will only be realizable by proved talent, and not by favouritism, recommendation, or nepotism. The days have passed in the gas industry when these things can be. The interests of the industry are too valuable to be entrusted to the incompetent, the indolent, or those who prefer to place their recreations in primary position, and the greater interests of life in secondary place, while the reverse ought to obtain.

In the gas-fitting examinations, Mr. Rogers is also impressed by the need for greater attention being paid to the theoretical instruction of the candidates; and they should also possess more knowledge of the construction and performances of the appliances with which they have to deal. This is of increasing importance with the progress that is being made in application and in the number of types. We further find the examiner is disappointed with the number of candidates who present themselves for the final gas-fitting examination. This probably evinces a certain honesty on their part in acknowledging their unfitness for passing the examination, though this is not in the interests of the industry, which employs an army of fitters, of whom only nineteen submitted themselves for examination! These are days in which we are talking of greater service to the consumers as the best means of protecting and advancing the interests of the industry; and there are signs of periodical inspection of fittings and appliances becoming a universal obligation and practice. Yet the evidence of this report is that little is being done by gas undertakings to promote the knowledge and efficiency of their fitters. If gas undertakings are privately working in this direction—and some we know are—then the Gas Fitting examinations, which, being (so to speak) objectives, are so beneficial in helping to raise the standard of qualification, do not reflect those efforts.

The Institution memorandum and the City and Guilds of London reports contain lessons, appeal, and advice which it is hoped will not go unheeded.

Institution Annual Meeting.

Betimes the Council of the Institution of Gas Engineers have fixed the date for the next annual meeting. It is to open (under the presidency of Mr. J. Ferguson Bell, M.Inst.C.E.) on Tuesday, June 9, at the Institution of Civil Engineers, the Council of which have kindly placed the Great Hall at disposal for the event. There is to be a visit to Derby on Friday, June 12.

Recording Gas Calorimeter.

One or two inquiries have been made of us lately as to whether there is any news of when the Gas Referees will be prescribing the recording gas calorimeter. At present there is no information; but of this we may be certain, that there will be no loss of time when the Referees are satisfied as to the fitness of the instrument in respect of reliability from all points of view.

Wembley.

Next Saturday will be the closing day of the British Empire Exhibition—an enterprise without compare on similar lines in the annals of the Empire. The grand total of visitors up to last Saturday was 17,063,609.

University of Leeds Jubilee.

The Jubilee Celebrations of the Leeds University will take place in December. The President (Mr. J. Ferguson Bell) and the Senior Vice-President (Mr. Charles F. Botley) will on the occasion represent the Institution of Gas Engineers.

Municipal Elections.

The municipal elections have been overshadowed by the General Election. The ratepayers in 336 municipal areas are being called upon to elect some 3300 representatives to serve on the Borough Councils. The Labour Socialists, it is stated, are putting up a strong fight to improve their position.

Coal Exports.

The export coal trade showed no signs of recovery during September. The quantity shipped was 5,098,406 tons, compared with 6 316,396 tons in September, 1923, and 7,082,729 tons in September, 1922. The values for September in the three years were: 1924, £5,738,364; 1923, £7,824,126; 1922, £8,110,083. The quantity of gas coal sent abroad during the month was only 696,770 tons, as compared with 738,249 tons in September, 1923, and 1,267,824 tons in September, 1922—the respective values being £749,663, £885,036, and £1,405,596. The average value per ton of gas coal exported last month was £1 1s. 6·2d. In the nine months of the year, 46,792,096 tons of coal were shipped, as contrasted with 59 472,942 tons in the corresponding period of 1923, and 45,476,573 tons in 1922. The values were: 1924, £55,837,606; 1923, £75,395,567; 1922, £51,410,935. Of these quantities and values, the contribution of gas coal in the nine months was 6,424,356 tons, as against 6,950,160 tons in 1923, and 6,725,032 tons in 1922—the respective values being: 1924, £7,452,956; 1923, £8,453 494; 1922, £7,389,032.

Gas Coke Shipments.

The overseas business in gas coke has not so far been so good this year as last. In September, 108,307 tons were exported, as against 140,339 tons in September, 1923, and 111,546 tons in September, 1922. The value last month was £190,381; September, 1923, £241,870; and September, 1922, £152,711. The average price per ton last month was £1 15s 2d. In the nine months, 721,840 tons of gas coke were exported, as against 834,395 tons in the corresponding period of 1923, and 585,758 tons in 1922. The values were: 1924, £1,264,147; 1923, £1,319,035; 1922, £840,875.

Sulphate of Ammonia.

There was a little reduction in the quantity of sulphate of ammonia exported last month as compared with the same month last year—the figures being respectively 23,225 tons and 23,858 tons. In the nine months, however, 201,017 tons were shipped, as against 185,006 tons in the same period of 1923.

Tar Products.

Regarding the business abroad in coal tar products—of benzole, 117,641 gallons were shipped last month, as compared with 142 603 gallons in September, 1923. In the nine months 1,287,507 gallons were exported, as against 1,141,541 gallons in 1923 Last month only 6826 gallons of naphtha were dispatched, compared with 14,583 gallons in September, 1923. The figure for the nine months is 158,152 gallons; and for the same period of 1923, 98,427 gallons. In tar oil, creosote, &c., business has not been so good this year. Last month the total exported was 2,513,000 gallons, as against 4,580,427 gallons in September, 1923. In the nine months, the quantity shipped was 31,771,003 gallons, as compared with 35,441,282 gallons in the same period of 1923.

Wales and Monmouthshire Junior Association.—Arrangements have been made for a meeting of the Association to take place at Ebbw Vale to-morrow (Thursday).

"The Constituents of Coal Tar."—Messrs. Longmans, Green, & Co. have published another monograph on industrial chemistry in the series edited by Sir Edward Thorpe, C.B., LL.D., F.R.S. This is entitled "The Constituents of Coal Tar," and is written by P. E. Spielmann, Ph.D., B.Sc., F.I.C., &c., whose other works will be familiar to many readers of the "Journal."

PERSONAL.

The Barnoldswick Council have appointed Mr. H. D. Robinson, Assistant Gas Engineer at Padiham, as Assistant Gas Engineer of the Barnoldswick Gas Department.

We are happy to be in a position to pass on to readers the gratifying news that after an absence, through illness, of nearly four months, Mr. Cyril G. Davis, Managing Director of the Davis Gas Stove Company, Ltd., has returned to active business.

Mr. A. H. Raven has joined Middlesex Gas Meters, Ltd., as the London and suburban representative.

The marriage took place on Oct. 23 of Lieut. F. H. Vince, R.E., of Gateshead-upon-Tyne, and Miss Rosina Hall, of Heaton, Newcastle-upon-Tyne. Lieut. Vince was formerly employed at the Saltley Works of the Birmingham Corporation, and is now Resident Superintendent at the Redheugh Works of the Newcastle-upon-Tyne and Gateshead Gas Company.

THE DUNDEE APPOINTMENT.

It will be remembered that in our "Personal" notes for Oct. 15 the announcement was made that Mr. William Wilson, M.B.E., of Burton-upon-Trent, had been recommended by the Gas Committee of the Dundee Corporation to succeed as Gas Engineer and Manager Mr. Alexander Yuill (who recently retired). Since then the Council, despite the recommendation of the Gas Committee, decided to appoint Mr. James Dickson, of Johnstone. So much publicity having been given to Mr. Wilson's name in connection with this matter, we think it is only fair to make his position quite clear, so far as the gas profession is concerned. Our statement regarding the recommendation of the Gas Committee was quite true, as they had been instructed to consider all the applications and make a recommendation. No doubt Mr. Wilson was not only surprised, but gratified, to find that he was the sole nominee of the Gas Committee; and further there was no reason whatever why he should even dream that the City Council would override the recommendation of their Committee. It is obvious that, subsequent to the majority decision of the Committee, something must have taken place behind the scenes; for at the Council meeting there was a three-cornered contest, with the result already indicated. Had the City Council adopted the proper course of putting singly the other nominees up against the recommendation of the Committee, the result might have been quite different. In view of the publicity that was given to the selection of the Committee, the course taken was, in our opinion, unfair to a man in Mr. Wilson's professional position—in fact, we do not remember a similar occurrence in connection with such an office in the gas industry.

OBITUARY.

The Whessoe Foundry and Engineering Company, Ltd., have suffered a loss in the death of Mr. Alfred T. Coates, the Managing Director, which occurred on the 22nd inst. Mr. Coates has been connected with the firm for very many years.

ELECTRICITY SUPPLY MEMORANDA.

These notes are being written before any results of the General Election are known. But the opinion may be ventured that the inclusion in the manifestoes of the Liberal and Socialist leaders of statements as to their intense concern in the generation of electricity in greater bulk, to ensure a generous supply for the revival of industry, to cure unemployment, to give the working man's home a liberal supply at a cost which his pocket will not feel, and to do away with domestic work which is necessary to his existence, has not had much influence upon the electors. They know very little about the generation of electricity, and they pass by with a smile the promises and visionary pictures of politicians, knowing full well that these things are of their stock-in-trade, or of at any rate some of them. We guarantee there are very few party candidates who have been giving their support to this particular item of policy who could stand any well-informed interrogation as to how it is to be done. We like the candour of "Meteor" of the "Electrical Times" on the question. He says: "The public should know that these orators have not the power to fulfil the promise; we wish the politicians would leave us alone." Mr. W. Nairn, Chairman of the Western Section of the Institution of Electrical Engineers, stated that the electricity supply industry is "embarrassed with a plurality of political notions," and they have come when the industry has reached firm ground. There is, however, one paper—the "Electrician"—which, it is patent, is very anxious that the electricity industry should accept from the politicians all the eleemosynary help it can. It wants subsidies or anything else which will help (as it thinks) to cheapen electricity. The menace

The Election and the Promise.

of such patronage does not trouble it in the least, and that menace is nationalization—nationalization as defined, and as would be practised, by Socialists and their next-door neighbours the Communists. The penalty of their patronage and charity is something worth taking into consideration before there is acceptance.

A Residential Tariff at Newcastle.

At some of the political meetings, there has been no end of hilarity over the glorious times that the Labour-Socialists have in store for their constituents if they return them to power so as to enable them to put new life into the electricity supply industry, and show it how to furnish current, at figures much below present cost prices, for the service of all sorts and conditions of people. We are not surprised at the amusement caused by these (in this matter) mentally blind people attempting to hoodwink the public in the way they are doing. But strange to say, the electrical people themselves are also endeavouring to show people that their existing charges are exorbitant, and that they ought, and are willing, to supply them on a much lower scale—so much lower that some of them would find themselves immediately incapable of paying their way if all their domestic consumers took it into their heads at once to accept their offer of what is known as the two-part tariff. There has been a noticeable spurt in the adoption of this system by electricity suppliers since the gas industry adopted the therm system, which, for the greater part of the gas supplied in Great Britain, puts into the possession of householders 100,000 B.Th.U. for anything between 5d. and 9d., as against the cost of 29 units (at 3420 B.Th.U. per unit) for electricity. One of the latest undertakings to offer the two-part system is the Newcastle-upon-Tyne Electric Supply Company, Ltd. They call it by the respectable name of the "Residential Tariff;" and it is interesting. The Company state that this is based upon a "small" standing charge, and the current consumed will, in addition, be booked up at 1d. per unit. The standing charge is to be on the basis of per room, excluding scullery, landings, &c., but taking in bedrooms, dining-room, drawing-room, kitchen, garage, or stables. For each room 18s. per annum is to be charged; so that the "small" standing charge for a twelve-roomed house would be £10 16s. A house of six rooms would only pay £5 8s. Let us suppose the occupier of the larger house consumes 1000 units per annum; his total bill would be £14 19s. 4d., or an average cost of 3·588d. per unit. If the tenant of the six-roomed house consumed 800 units, his annual bill would come to £8 14s. 8d., or 2·6d. per unit—about 1d. less per unit than is paid by the man who occupies the larger house. The unfairness of the system is patent. Supposing the man in the twelve-roomed house is at present on the ordinary tariff of 6d., he pays £25 for his 1000 units. The change-over means an immediate loss of revenue to the Company of £10 0s. 8d. per annum. The consumer has got to use 2408 more units per annum before his old revenue of £25 is realized. This illustrates what is meant when we say that financially it would be a bad thing for an undertaking if all householders immediately turned over to the new system. If the Company can afford to supply a man using 1000 units under the bi-part system at an average of 3·588d., they could afford to supply another consumer using the same quantity on a flat rate of 3·588d. However, the fewer rooms a man has in his house, the cheaper the average rate at which he can get electrical energy compared with a man living in a larger house whose consumption may be about the same. Now the idea of this bi-part tariff is to encourage the use of the current for cooking and heating; and the attempt is made to gain business by telling the customer that the charge for all current consumed is 1d. per unit. The actual average payment per unit by the man living in the twelve-roomed house—3·588d.—is not a figure to be contemplated with equanimity for cooking and heating. Supposing his consumption goes up to 2000 units, his average payment would be 2·592d. per unit. Again we ask, is that a competitive price for 3420 B.Th.U. for cooking and heating? This bi-part tariff is one of the most deceptive plans for obtaining custom that we have ever come across. The penny per unit upon which there is so much play has no actual existence. The average per unit of the standing charge must be added to the penny to get to the real facts. There are nineteen conditions which the consumer has to study and comply with. They are heavy reading; and our inclination (probably it is the same with some of the householders to whom they are addressed) is to let them pass without perusal.

Firemen on Electric Fires.

There has been a National Conference of representatives of Fire Brigades at Abergavenny. Many subjects were discussed. Among them was that of electricity and fires. It is acknowledged by the firemen that the fire risk in electrically lighted buildings is an interesting subject. It would not have been raised otherwise. The interest is largely increased because frequently the Fire Brigades have to report the cause of fires as "unknown." Electricity is strongly suspect; but the difficulty of emphatically ascribing some of the "cause-unknown" fires to electricity is that the fire practically wipes out all positive information as to the origin. The matter was raised by the Commanding Officer at Nuneaton writing and inviting opinions as to the number of cases in which fires could be "proved" to be of electric origin. We are afraid electricity is often let off lightly because of the difficulty of proof for the reason already stated. In the opinion of the Nuneaton C.O., the fusing of wires has been the effect rather than the cause of the fires. That is generous. C.O. Russell only knows of three cases of fire during thirty years in Leigh which could be stated to have an electrical origin; and in these bad workmanship was to blame. We make no imputation, but merely state the fact that C.O. Russell is an electrical expert. The late Senior Divisional Officer of the London Fire Brigade (Mr. S. G. Gamble) knows more than he cares to state. He exercised caution when he wrote that "it is difficult to say how many fires are due to electricity." "Electric light," he added, "is being boomed so much nowadays that it is akin to a crime to suggest that electric current could cause trouble." There seems to be a touch of sarcasm in that phrase. The Brighton C.O. (Mr. Thorpe) agrees as to bad workmanship being usually to blame for fires electrically raised. In his experience, the trouble generally occurs where electric wires are run in damp places, and in proximity to gas pipes, or where wood casing is used instead of steel tubing. C.O. Rowlands, of Torquay, also spoke of the danger of running electric wires near compo gas pipes; and C.O. Carter agrees that the cause of electric fires is carelessness. C.O. Kirk is a gentleman who believes in caution. He confesses (so the report before us states) that after fires he makes a practice of reporting to the assessors "Cause Unknown." That must be very serviceable; but does it show candour?

Bad Workmanship.

These are days when there is an attempt to lower the standard of electrical installation in order to cheapen it. There is also the rebellion in the electricity supply industry against the new rules of the Institution of Electrical Engineers; and there is the charge that the Fire Offices turn a blind eye upon, or are very indifferent to, the character of installation work, although they were parties to the increased stringency that is found in the revised rules. But what the officers of fire brigades say on the subject of bad workmanship and the ignorant running of wires in proximity to gas-pipes, ought to be a warning. There should be insistence on a standard of work in the defence of the public and their property. But there is no one, other than the Fire Offices, who could enforce a standard. No one perhaps has greater experience than Lieut.-Col. Fox, C.O. of the London Salvage Corps. He says that as the wood casing of electrical installations gets worn out, an increasing number of electrical fires must be expected. That is not a very encouraging outlook at this time of day. Another trouble, he finds, is the "wandering lead" which is constantly wearing out, and in time the inevitable happens. If the fittings were looked after properly, he believes there would be less difficulty; but owing to the iniquitous way in which installations are often allowed to be put in, there will always be trouble. The views of the Commanding Officers of Fire Brigades—particularly of Lieut.-Col. Fox—should receive the careful consideration of the men of the electrical industry, and serious efforts should be made to exterminate bad installation work. It is definitely known that fires are caused through electricity; it is well known that poor installations are subject to rapid deterioration, and that this favours fire-raising. A more prolific harvest of fires is therefore possible.

Courage, Mr. Robinson!

The courage of electrical engineers who make, through raucous loud speakers, boasts as to electric cooking is well exemplified by the agility which Mr. L. L. Robinson is showing in running away from Mr. Sam Hall's challenge to a public test. We noticed the invitation in the "Memoranda" last week. Now we see that Mr. Robinson has sent further letters to the electrical papers—and still no acceptance. He has written another letter to the "Electrical Review" giving a few quotations from his precious volume of testimonials from users of electric cookers, which volume he seems to carry about with him, or quotes from, in the manner of a vendor of quack nostrums for curing many of the ills to which flesh is heir. But such a thing as being responsible for pitting an electric cooker against a modern gas cooker in a straight contest is something to which Mr. Robinson would obviously rather not be a party; otherwise he would with alacrity accept Mr. Sam Hall's challenge. Of course, he is not so foolish as to claim to be ignorant of the fact that in the gas industry there are people who have been sufficiently interested to put electric cookers and other apparatus through their paces, and know precisely their performances. It would be a much more striking feather in the cap of Mr. Robinson if he came out victor in a contest than is parrot-like quotation from a book of testimonials. In the late House of Commons, nearly 200 testimonials could have been obtained as to the righteousness of the Russian Treaty. The gas industry looks upon its solid cash transactions as the best of testimonials.

A Foolish Letter.

Mr. Robinson has also been broadcasting in the Electrical Press a letter containing quotations from the claims of the makers of a special type of gas-cooker with enclosed oven. It is surprising that a trained engineer can be so puerile as to cite statements such as those in his letter that have been made by the owners of a proprietary type of goods. We suppose Mr. Robinson, before writing his letter, did not reflect upon the millions of gas cookers there are in use without closed-in ovens, and upon their many years of service and uncountable millions of meals that have been cooked in them. Yet the Chief Medical Officer of the Ministry

of Health says that people are living longer, and that health is on a higher plane than ever. The Borough Electrical Engineer of Hackney, with such facts available, should try to be logical. Instead of being that, he prefers to quote from an advertisement; just as he is foolishly fond of quoting from his "volume" of testimonials. Apparently he does not know that enclosed ovens in gas cookers are no new thing; they were with us years before the war. But Mr. Robinson does not say who the advertiser is. Is he one of the well-known and long-established makers of gas-cookers? If not, then we are surprised at any one in Mr. Robinson's position making point of such a tissue of absurdity. But he appears proud of it, having appended his name to the letter, and sent it to (at any rate) three electrical papers. Among the points (which Mr. Robinson terms "priceless") are: There are no flues where live gas can collect to cause an explosion; owing to the oven being entirely closed in, an "enormous" reduction is effected in gas consumption; dirt and germ laden dust from the floor cannot be drawn on to food; mice cannot get into the oven and drip pan; temperature in oven is not lowered by a sudden draught when an outside door is opened; the juices of meat are retained to a remarkable extent, and the shrinkage is far less. These and other silly things are said in favour of the particular type of oven. The advertisement of the oven was found by Mr. Robinson in the "Radio Times;" but that gentleman's intelligence and experience possibly do not enable him to distinguish from others an advertisement that is framed for the specific purpose of catching custom by playing upon the imagination. Perhaps "possibly" is not necessary in the foregoing phrase, as Mr. Robinson confesses by his action and by his words that "now the cat is out of the gas bag, we can safely hand on the words of the gas-stove manufacturer." To what lengths some electrical men will go to make points! Any rough tool is good enough for them. We cannot believe that Mr. Robinson is so ignorant that he does not know there is more exaggeration than truth in the statements of the people who so advertise. And what of the "technical" papers that give up space to such silly stuff?

Accidents.

Shortly before 7 o'clock one recent evening Brighton and Hove and the outlying areas were largely deprived of electric current. Parts of the district were only temporarily affected; but hours afterwards there were outlying mains that had not recovered. This was the second failure within a few days. According to one report, the first was due to an accident to a cable; and the second was attributed to a "slight" mechanical mishap on the new generating set at the Southwick station. A few days ago, on the North London Railway, the rear coach of an electric train was found to be on fire. The passengers had to leave the train at Acton; and the current had to be switched-off while the station staff extinguished the fire. The train had to be shunted on to a siding, pending more serious attention. The "Electrical Review" should have a "Lest we Forget" editorial on the subject.

THE INSTITUTION OF GAS ENGINEERS.

Council Meeting.

A Meeting of the Council of the Institution of Gas Engineers was held at the Adelphi Hotel, Liverpool, on Monday afternoon, Sept. 29, Mr. J. Ferguson Bell (the President) in the chair.

There were also present: Mr. J. E. Blundell (Carlisle), Mr. C. Dru Drury (Sunderland), Mr. Percy N. Langford (Coventry), Mr. H. D. Madden (Cardiff), Mr. John W. M'Lusky (Glasgow), Mr. C. S. Shapley (Leeds), Mr. W. J. Smith (Bolton), and Mr. J. Terrace (London), ordinary members of Council; Mr. James Campbell (North British Association), Mr. Harold Davies (Manchester District Institution), Mr. E. F. Keable (Eastern Counties Association), Mr. S. Shadbolt (North of England Association); Mr. Samuel Tagg (Preston) and Mr. J. D. Smith (Belfast), Past-Presidents; and Mr. W. E. Price (West Chobham), Hon. Secretary.

Expressions of regret at absence were received from Messrs. Charles F. Botley and John Wilkinson (Vice-Presidents); Messrs. J. H. Campbell, Douglas Helps, Hubert Pooley, and J. Wesley Whimster, ordinary members of Council; Messrs. W. E. Caton (Midland Association), Thomas Hardie (Past-President), W. C. Jackson (Wales and Monmouthshire District Institution), and L. J. Langford (Southern Association).

After the usual preliminary business, the President, in feeling words, made reference to the loss which the Institution had sustained through the deaths of Sir George Beilby, hon. member, Mr. Thomas Crossley (Guernsey), Mr. Philip Monson (London), and Mr. David Terrace (Middlesbrough), members.

The Roll.

Applications for membership were considered, and the following candidates were approved for ballot:

For the Class of Member.—Messrs. Johs. E. Borresen (Copenhagen), James Dickson (Kirkintilloch), Charles Edwart Holt (Wilmslow), John Joseph Merrell (Sutton-in-Ashfield), Harold Robinson (Annan), and Robert Sturrock (Ardrossan).

For the Class of Associate Member.—Messrs. William Wallace Chisholm (Hull); Clifford Duncan (Hull); John Kenneth Grant (London); Francis Walter Howard (London); Raymond Prince (Heywood); Eric Baden Shaw (Stoke); and Edward Rolland Willis (Brentford).

Transfers from the Class of Associate Member to Member.—Messrs. Walter A. Barnett (Barnet) and Geo. W. Richmond, D.S.O. (Beckton).

Admitted as Students of the Institution.—Messrs. Edward Morgan Edwards (Neath), Wilfrid Richmond Quiller (Plymouth), Albert Edward Simpson (Nottingham), Reginald F. Thomson (Nottingham), and John Herbert Wainwright (Tipton).

It was reported that Mr. W. E. Caton, of Oxford, has been appointed on the Council to represent the Midland Association of Gas Managers, and that Mr. John Campbell, of Dunfermline, had been appointed to represent the North British Association of Gas Managers.

The respective Presidents of the Swiss Association of Gas and Water Engineers, the Norwegian Association of Gas Engineers, the Swedish Association of Gas Engineers, and the Danish Association of Gas Engineers were nominated for election as honorary members of the Institution during the period of their office.

Next Meeting.

It was decided that the ensuing annual general meeting be held in London, opening on Tuesday, June 9, in the Great Hall of the Institution of Civil Engineers, which had been kindly placed at the disposal of the Institution by the Council of that body.

A visit to Derby will take place on Friday, June 12. The outline programme of the arrangements was submitted and approved.

Gas Examinations.

The report of Mr. Kendrick, Examiner in Gas Supply of the City and Guilds of London Institute's examinations for the year 1924, was submitted, as was also that of Mr. Rogers, Chief Examiner in Gasfitting. It was resolved that these reports, subject to the approval of the City and Guilds of London Institute, be published.

A request from the City and Guilds of London Institute for the nomination of an Examiner in Gas-Works Practice was received, and referred to the Emergency Committee.

General Items.

The report of the Advisory Committee on Education was presented, as was also the scheme as revised to include Scotland, Northern Ireland, and the Irish Free State. These received the approval of the Council.

It was reported that Mr. C. B. Marson, B.Sc. (Leeds), had been appointed to succeed Dr. S. Pexton as Institution Gas Research Fellow at the University of Leeds.

An invitation was received from the University of Leeds for the nomination of representatives of the Institution to attend the Jubilee Celebrations taking place in December next. It was resolved that the President and the Senior Vice-President (Mr. Charles F. Botley) be appointed to represent the Institution.

The report of the delegates (Mr. Robert Watson, of Doncaster, and Mr. Walter Dunn, Secretary of the Institution) to the International Commission on Illumination, which was held at Geneva in July last, was presented. It was resolved that it be printed and presented at the ensuing annual meeting of the Institution.

The report of the delegates (Mr. R. E. Gibson and Mr. H. E. Stone) at the Royal Sanitary Institute Congress, which was held at Liverpool, was presented, accepted, and adopted.

Mr. Arthur E. Broadberry and Mr. Thomas Goulden transmitted their report as delegates of the Institution at the Jubilee Meeting of the Société Technique de l'Industrie du Gaz en France, in June last, and the Council directed that it should be circulated.

The President, who had, with the Secretary of the Institution, attended as delegates the Kelvin Centenary Celebrations, presented a report of the proceedings, which were held under the Presidency of Lord Balfour, O.M., on July 10 and 11 last.

The President also reported having attended, with the Secretary, the meeting of the Swiss Association of Gas and Water Engineers, which was held at Thun, Switzerland, on Sept. 6, 7, and 8.

Consideration was given to the position of the Institution with reference to the British Refractories Research Association, and it was resolved that the matter be referred to the Joint Research Committee of the Institution and the Society of British Gas Industries.

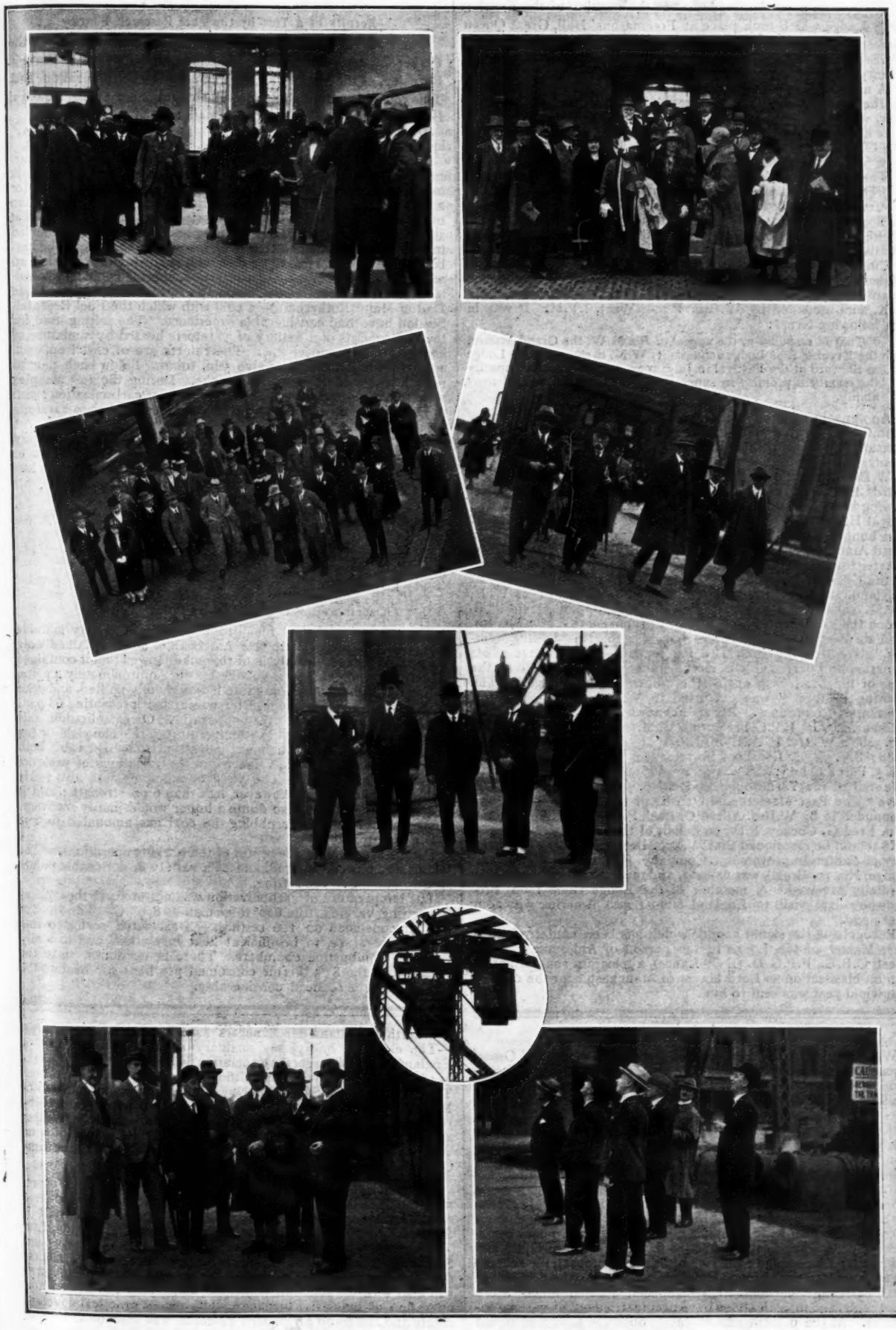
The interim report of the Committee appointed by the Council to consider the replies received to the questionnaire on Wrought Iron Tubing was reported, and the Council directed that copies be circulated.

Observations of the Gas Appliances Specification Sub-Committee of the National Gas Council on the report of the Gas Investigation Committee on Standard Methods of Testing Gas Cookers were considered, and referred to the Sub-Committee of the Gas Investigation Committee having the matter in hand.

Murdoch's House and Gasholder.

Suggestions for the proposed preservation of Murdoch's house at Birmingham and Murdoch's gasholder at Smethwick were considered. Councillor Stephen (Chairman of the Gas Committee of the Smethwick Corporation) was invited to give particulars, and replied to various questions. It was resolved that the matter be referred to the National Gas Council.

The report of the Emergency Committee was presented, accepted, and adopted, as was also that of the Finance Committee—the latter including the certified monthly statements.



The Southern Association at Portsmouth.

EVENING STAR LODGE, NO. 1719.

There was a good attendance at the meeting of the Evening Star Lodge which took place at Freemasons' Hall, Great Queen Street, London, last Wednesday. The chair was occupied by W.Bro. Rae P. Normand; Bros. H. L. Sheppard and A. H. Henry being in their respective positions as S.W. and J.W.

A message from W.Bro. H.R.H. The Prince of Wales in reply to the Lodge's loyal and fraternal congratulations on his birthday, which had been dispatched at the last meeting, was read.

A ballot was taken for Bro. William Hewett Ely, Engineer of the Gas-Works, Woking, formerly of the Bisley Lodge, No. 2317, as a joining member, and he was duly elected.

The W.M., assisted by W.Bro. J. Fred Wicks, P.M., advanced a degree: Bro. John Alfred Williams, Assistant Secretary to the Tottenham District Light, Heat, and Power Company; and Bro. Clifford Adey King, Chairman of Messrs. Walter King, Ltd., Proprietors of the "GAS JOURNAL," and son of the late W.Bro. Walter King, P.M.

Consideration was given to a motion with reference to the Masonic Million Memorial Fund. The resolution, which was unanimously carried, was proposed by W.Bro. Arthur Valon, P.M., L.R., and seconded by W.Bro. Frank West, I.P.M. It was in the following terms:

> That in response to the appeal of the M.W. the Grand Master, the Evening Star Lodge requests its W.M. to represent the Lodge as Steward at the Festival in July, 1925, and that in that capacity the members promise to support his efforts to the best of their ability.

An appeal on behalf of the Freemasons' Hospital and Nursing Home was reported and referred to the Standing Committee for consideration, as was also a letter with reference to a proposed Central London Masonic Club.

W.Bro. Normand presided at the dinner which took place afterwards in the adjoining Connaught Rooms. The Loyal Toast having been observed, that of "The W.M. the Grand Master His Royal Highness the Duke of Connaught and Strathern, K.G.," was honoured. "The W.M. the Pro Grand Master the Rt. Hon. Lord Ampthill, G.C.S.I., G.C.I.E.; the Rt. W. the Deputy Grand Master the Rt. Hon. Sir T. F. Halsey, Bart., P.C.; and the rest of the Grand Officers Present and Past of the Grand Lodge of England" was also given from the Chair. W.Bro. Frank West, I.P.M., submitted the health of "The Worshipful Master," to which the W.M. replied, subsequently proposing that of "The Immediate Past Master." To the toast of "The New Joining Member," given from the Chair, Bro. Ely replied. In the course of his remarks, he referred to the circumstance that his father at the time of his death was one of the officers of the Lodge. "The Visiting Brethren" was entrusted to W.Bro. E. G. Smithard, Treasurer, to propose. It was acknowledged by W.Bro. R. J. Milbourne, S.P., P.P.G.P. (Salop), W.M. of the Murdoch Lodge, No. 3480; W.Bro. F. A. Eyre, I.P.M. of the Buxton Lodge, No. 1688; Bro. S. E. Logsdon, Secretary of the St. George Lodge, No. 5, Pernambuco; and W.Bro. Fred H. Sheppard, P.P.D.G.D.C. (Hants.) of the Yarborough Lodge, No. 551. Bro. E. F. Fussell gave "The Past Masters and Officers of the Lodge," which was responded to by W.Bro. Alfred C. Beal, P.M., for the former, and Bro. Fred G. Cockey, S.D., on behalf of the latter.

It should be mentioned that W.Bro. Bernard F. Browne, of the City of Santos Improvements Company, P.M. of the Wanderers' Lodge, No. 10, Brazil, was present, and made a speech, which was cordially received. A member of the Lodge since 1906, Bro. Browne's last visit to England from South America was four years ago.

Recognizing the signal honour which has been conferred on a Past Master of the Lodge in the person of Alderman Fred J. West, C.B.E., P.P.G.D. (East Lancs), a telegram congratulating him on his election as Lord Mayor of Manchester for the coming municipal year was sent to him.

Fuel Problems in Japan.

Writing in "Fuel in Science and Practice" Kwan-Ichi Omori discusses low-temperature carbonization as applied to fuel problems in Japan. Since the war, he states, the price of fuels has increased enormously, and many of the manufacturing industries have been affected. Particularly is this the case with domestic fuel, the majority of which is charcoal; and now several forms of briquettes have come into general use, especially those made from the coke of rice-hulls. Coal itself is not very suitable for domestic heating in Japan, and gas is only used to a limited extent. In 1919 the Naval Fuel Station at Tokuyama began some experiments on the low-temperature carbonization of Japanese coals, using a method similar to the Tozer process. As a result of these experiments, the Engineer of the Fushun Colliery introduced a prospectus to the public for the production of liquid and solid fuels; but, owing to the lack of financial support, the scheme never came into operation. However, since 1920, the problem of low-temperature carbonization has been studied much more thoroughly, and investigations have been carried out at various institutes. At the present time in Japan both the solid and liquid products from low-temperature carbonization are required, it is stated, but in future it may very probably be that the demand for liquid products will far exceed that for solid products.

THE PARKER LOW-TEMPERATURE CARBONIZATION PLANT.

Results of a Test by the Fuel Research Board.

The Fuel Research Board have issued a report of a test on the Parker low-temperature carbonization plant installed at Barugh, Barnsley, at the works of Low-Temperature Carbonization, Ltd. This report is obtainable from H.M. Stationery Office, Adastral House, Kingsway, W.C. 2. (Price 9d. net.)

OUTLINE OF TESTS.

The plant available consisted of two units each capable of carbonizing 50 tons of coal per 24 hours. The test was carried out on one of these units after it had been in continuous operation for a period of some eight days on Dalton Main coal. Observation of the working of the retort for a period of 48 hours showed that steady conditions had been attained; and a test was then started in which it was intended that over 100 tons of coal should be carbonized. This test had to be discontinued owing to a breakdown of the exhauster plant. On re-starting, shortage of coal necessitated the restriction of the test to 92 tons. The coal used was Dalton Main (Rotherham)—a coal with which the Fuel Research Station have had considerable experience. The setting used for the test consists of a battery of 32 retorts heated by a mixture of coal gas and producer gas. The retorts are of cast iron, each consisting of a nest of twelve 5-in. tubes. Below each pair of retorts is a cooling chamber for coke. During the test samples were taken of the coal and of the products of carbonization; and the conditions of working and the labour required were carefully noted.

In order to determine whether the test had been a satisfactory one, a weight balance was prepared, and this showed a loss of only 0·48 p.ct. This, in conjunction with a thermal balance loss of 5·2 p.ct., was regarded by the Board as very satisfactory.

YIELD AND NATURE OF PRODUCTS.

The yields of products per ton of coal were as follows:

Coke	13·92 cwt.
Gas	5620 c.ft., or 39·6 therms.
Tar	18·62 gallons.
Liquor	26·00 ,,
Crude spirit	1·78 ,,
Ammonium sulphate	13·55 lbs.

The coke or smokeless fuel produced was of a very suitable size (1 to 3 in. pieces). It was not friable, and contained only 4·6 p.ct. of breeze. Analysis of this coke showed that it contained rather a low percentage of volatile matter (approximately 4 p.ct.). When burnt in a household grate it was readily ignited, and gave a good hot fire. The yield of tar was high, representing 68 p.ct. of that obtained in the assay apparatus. On examination, this tar proved to be a normal low-temperature tar. The yield of gas was fairly high and, throughout the test, varied considerably both in volume and in calorific value owing to variations of pressure in the hydraulic main. The yield of ammonia was also fairly high. The liquor was, however, less than 6 oz. strength; and it is questionable whether so dilute a liquor would justify recovery. The spirit obtained by scrubbing the coal gas amounted to 1·78 gallons per ton of coal.

Details are given in the report of the working operations, of the labour and power required, and of a variety of noticeable points in the handling of the setting.

The temperature of carbonization was not uniform throughout the setting, varying from 600° to as high as 800° C. The amount of fuel consumed on the setting was excessive owing to this high temperature, to insufficient heat insulation, and to badly designed combustion chambers. There is no doubt, state the Board, that the 83·5 therms consumed per hour for heating the setting could be reduced considerably.

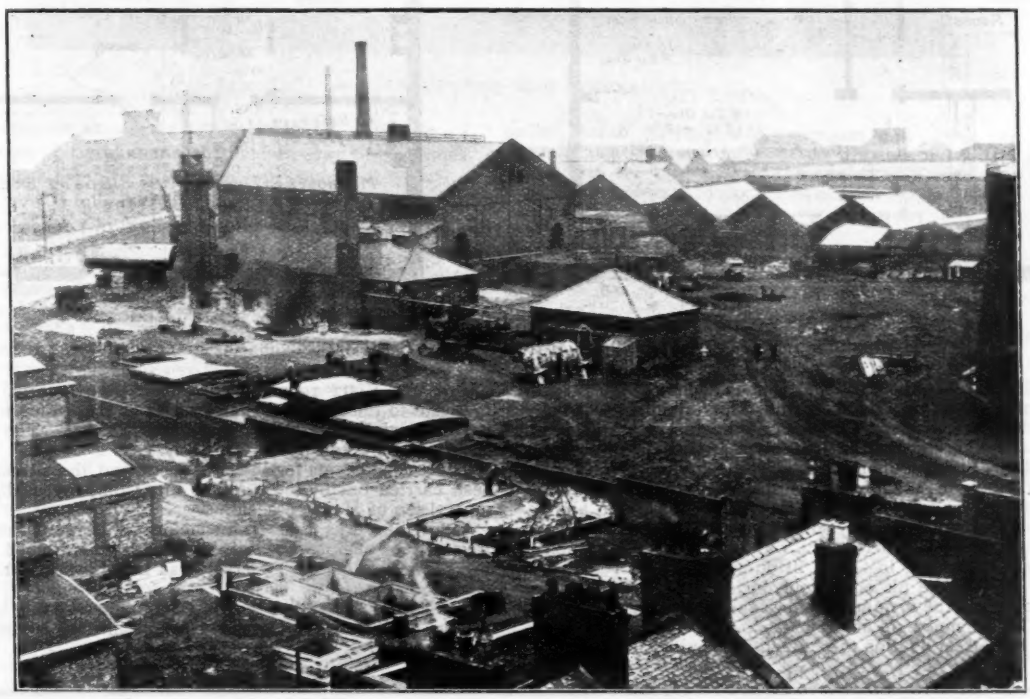
North of England Gas Managers' Association Auxiliary Meeting.—The eleventh half-yearly auxiliary meeting of the North of England Gas Managers' Association will be held at the works of the Walker and Wallsend Union Gas Company, Howdon-on-Tyne, at 2 p.m., on Saturday, Nov. 8, under the chairmanship of Mr. William Batt., jun., of Newcastle. Two papers are to be read and discussed—one by Mr. G. E. Anderson, of the Walker and Wallsend Union Gas Company, entitled "Random Notes on Works Topics," and the other by Mr. J. B. Henderson, of the same Company, on "A Few Distribution Experiences."

Lectures on Furnace Heating.—In connection with the Department of Fuel Technology at the University of Sheffield, a course of six lectures on "Furnace Heating" is to be given by Mr. R. J. Sarjant, M.Sc. (London), A.R.C.Sc., of Messrs. Hadfields, Ltd. The lectures will be delivered in the Mappin Hall of the Applied Science Department, St. George's Square, on successive Thursday afternoons, at 5.15, commencing on Oct. 30. The lectures will deal with the scientific principles underlying the design and operation of industrial furnaces, while recent practical developments and the trend of modern research will also be discussed. The course (the fee for which is 10s. 6d.) is primarily designed for the technical student, but will also be of interest to those already engaged in industrial practice.

MANCHESTER DISTRICT INSTITUTION OF GAS ENGINEERS.

The 199th Quarterly Meeting of the Institution was held on Friday last, at Runcorn, under the presidency of Mr. G. S. FRITH, J.P., Engineer and Manager of the Runcorn Gas Company. Part of the programme was to pay a visit to the works of the United Alkali Company, Ltd., at Widnes. The business of the meeting was no more than ordinary, yet the attendance of members made a record. Never before were there so many promises to be present at a quarterly meeting. Without doubt this was due to the esteem in which the President is held, not only because of his personality, but for his untiring efforts to further the interests of the Institution. Mr. Frith was for many years the Secretary of the Institution, and did his work unusually well. Widnes, it was admitted, is not an attractive town, though one of its titles to fame is that it produces very cheap gas.

On the members arriving at Widnes they were conveyed in motor buses to the Marsh Works of the United Alkali Company.



RUNCORN GAS-WORKS

There they were divided into groups of fifteen, and were taken through the works. The last group was escorted by Mr. C. S. Imison, Acid Manager to all the Company's works. The guests first saw the manufacture of sulphuric acid from Spanish pyrites by the chamber process. Then they witnessed the production of oleum by the contact process. Later they saw the manufacture of sulphuric acid from spent oxide and from brimstone. Finally the visitors inspected the Company's power station at West Bank. Here electricity is generated for the Company, and the electrolytic process is in use for the manufacture of caustic soda and chlorine. The visitors were impressed by the cleanliness of the works and the absence of noise, smoke, and objectionable smells. Of the 130 persons who had promised attendance at the meeting about 80 took part in this visit. Some of the Yorkshire visitors were detained on their way by fog.

LUNCHEON.

After the inspection a luncheon was given by the Runcorn Gas Company—Mr. J. MASON FRITH, J.P., Chairman of the Company, and an elder brother of the President of the Institution, presiding.

Mr. IMISON proposed "The Manchester District Institution of Gas Engineers." He bore witness to the importance of the Institution and the opportunity which its meetings afforded for the interchange of views on technical subjects, to the advantage of the gas industry and the well-being of the country generally. He was glad that the old ideas of exclusiveness among technicians had passed away. No longer did the captains of industry try to hide their secrets. The war had broken down that sort of thing, which would never be restored. In conclusion he paid a warm tribute to his old and valued friend Mr. George Frith.

The PRESIDENT replied to the toast in a few words, acknowledging the kindness exemplified by the record attendance. Referring to the way in which spent oxide is now used, he remarked that, of the total quantity of sulphuric acid produced in this country, about a quarter was made from spent oxide.

Mr. R. E. GIBSON, M.Inst.C.E., of Liverpool, proposed the toast of "The Runcorn Gas Company." He spoke of the undertaking as progressive and up-to-date, adding that a visit to the gas-works and the Company's showroom would afford additional testimony to this.

The CHAIRMAN of the Company, in acknowledgment, referred to the part played in the history of the Runcorn gas undertaking by the members of his family—himself, his brother, and their father. As to the Manchester Institution of Gas Engineers, his brother was not the only President which Runcorn had turned out, for Mr. Harold Davies, of Chesterfield, a former President, received his training at Runcorn.

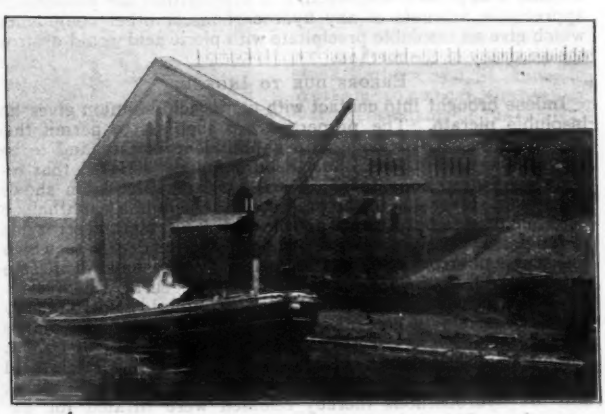
Mr. GROUNDS, Chairman of the Urban District Council of Runcorn, gave the Institution a most cordial welcome to the town.

BUSINESS MEETING.

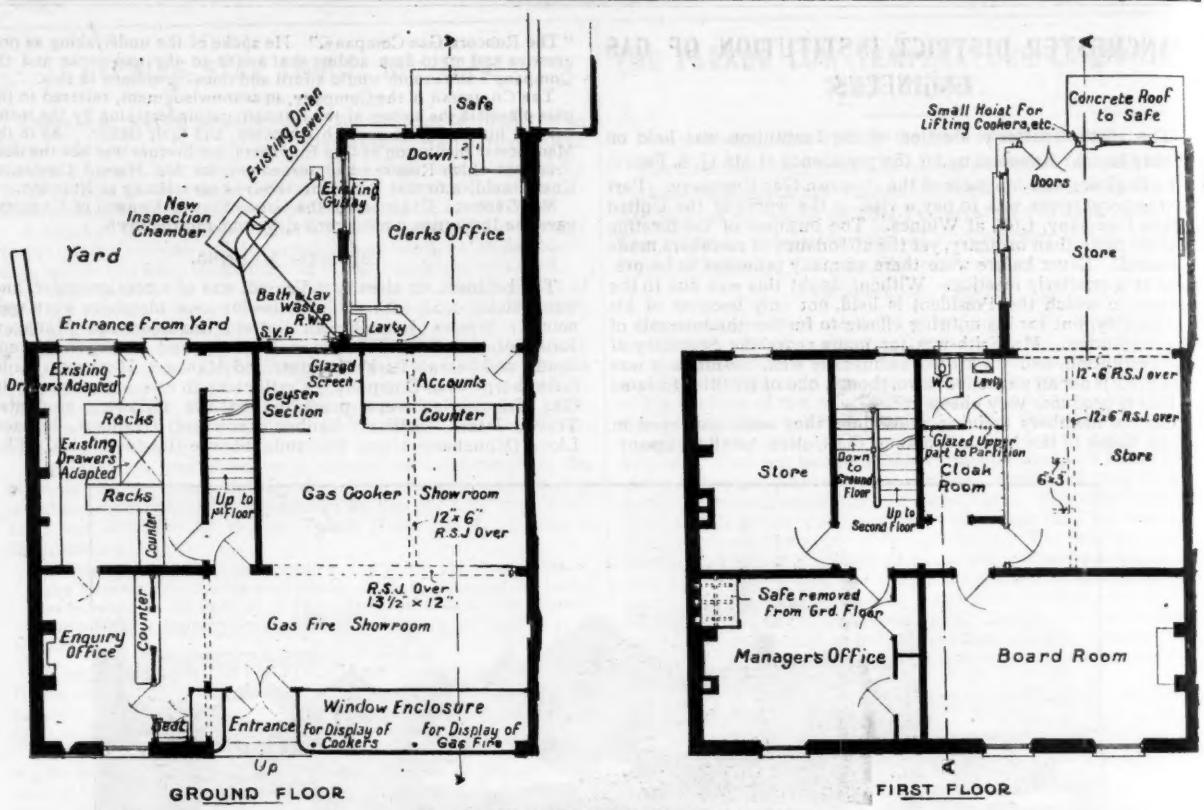
The business, as already indicated, was of a routine order, and was quickly dealt with. The following new members were welcomed: Messrs. John Edwin Sutton, Engineer and Manager, Ramsbottom; Harold E. Stone, Engineer and Manager, Birkenhead; and Joseph Park, Engineer and Manager, Hemsworth and Grimthorpe Gas Company. Certificates in the higher grade in Gas Engineering were presented to the following students: Trevor Dean (Halifax), Reuben Crowther (Halifax), Horace Lloyd (Manchester), and Benjamin Thorpe (Huddersfield). The scrutineers of the ballot papers reported that Mr. F. H. Robinson, of Harrogate, had been chosen unanimously for the office of President. Mr. C. S. Shapley, of Leeds, is now Senior Vice-President, with Mr. R. H. Ginman, of Leek, as Junior Vice-President. Mr. W. Rogerson is again Secretary, and the three vacancies on the Committee were filled by the appointment of Messrs. W. M. Carr (Stretford), J. Mitchell (Nelson), and A. J. Harrison (Accrington). Messrs. W. Hill (Stalybridge) and Francis Elliott (Leyland) are again the Auditors.

GAS AND STREET LIGHTING.

At the end of the business meeting the PRESIDENT announced



Unloading Coal.



SHOWROOMS AND OFFICES AT RUNCORN.

that Mr. Shapley was about to be elected President of the Institution of Public Lighting Engineers and Superintendents—a body which included electricians as well as gas engineers. The members of the Manchester District Institution of Gas Engineers congratulated Mr. Shapley upon his prospective appointment.

Mr. SHAPLEY, in acknowledging the congratulations of his friends, said it was important that the presidency of the above-named body should be held by someone in the gas industry, particularly at this time. There was a wave of electricity sweeping over the street lighting in Great Britain. This wave was very real; and it would be his endeavour during his year of office—and he would ask the members of the Manchester District Institution of Gas Engineers to help him—to see that gas was given a fair chance in street lighting throughout the country.

VISIT TO THE WORKS AND SHOWROOMS.

A visit to the showrooms and works of the Runcorn Gas Company brought the day's proceedings to a close. The showroom is certainly a credit to the Company.

The arrangements for the showroom, and the alterations, have been carried out by the Nautilus Fire Company, Ltd., under the supervision of Major Wheeler.

As for the works, there is a spaciousness about them much appreciated by engineers who have to work in cramped surroundings. The two big gasholders, it was noted, were surrounded by grass and shrubs.

Thanks were accorded the Gas Company for their hospitality, and the United Alkali Company for permitting a visit to their Marsh Works.

EFFECTS OF INDENE ON NAPHTHALENE DETERMINATIONS BY PICRIC ACID.

[Extracted from a Paper by R. L. Brown and H. G. Berger published in the September issue of "Industrial and Engineering Chemistry."]

The prevailing methods of determining naphthalene in gas are based on the formation of an insoluble picrate of naphthalene in aqueous picric acid solution. The details of the methods are too well-known to require description, except to say that they depend upon the determination of the amount of picric acid which combines with naphthalene to form naphthalene picrate; and as the method is at present employed, it is evident that the presence of appreciable amounts of any hydrocarbons or other compounds which give an insoluble precipitate with picric acid would destroy the accuracy of the method.

ERRORS DUE TO INDENE.

Indene brought into contact with picric acid solution gives an insoluble picrate. The properties are such as to permit this picrate to be carried along with naphthalene picrate, and to be reported as naphthalene. It can be definitely asserted that indene is a proved constituent of coal gas, and calculation shows the possible error due to the presence of indene in a naphthalene determination to be 34 grains per 100 c.ft. The potential error due to the presence of indene is enormous; and the degree to which this source of error is real has been fixed. It is shown that from 45 to 50 p.ct. of the indene carried by nitrogen at 20° C. is removed as picrate by a saturated solution of picric acid. Exactly 85 c.ft. of coke-oven gas, taken after the final cooler and before the light-oil scrubbers, were passed at an average rate of 1·2 c.ft. per hour through a train of three bottles containing picric acid solution. The resulting picrates were decomposed with alkali, and the hydrocarbons thereby released were titrated for unsaturation. This, calculated as indene, amounted to 12·7 grains per 100 c.ft. Tests on gas from horizontal retorts proved the presence of indene to the extent of 36 p.ct. of the total picrates while vertical retort gas contained 33 p.ct.

Indene is, of course, present in carburetted water gas, and it is therefore definite that the picric acid method for the determination of naphthalene in either coal gas or carburetted water gas is unreliable.

SIGNIFICANCE OF ACCURACY IN THE DETERMINATION OF NAPHTHALENE.

The determination of naphthalene in industrial gases is of considerable commercial importance. Suppose, for instance, that gas is being bought in bulk from a coke-oven installation under the condition that it contains not more than a definite quantity of naphthalene. It is conceivable that indene picrate, being mistaken for naphthalene picrate, may cause the payment of penalties or the running of a naphthalene scrubbing plant without sufficient grounds. In the past the precipitation of picrates has been considered an indication of naphthalene in the gas, and the amount a measurement. In view of the evidence in this paper, the picrate method in this usage has been untruthful and misleading.

Price of Gas at Portsmouth.—In connection with the speeches at the luncheon given by the Chairman and Directors of the Portsea Island Gas Light Company on the occasion of the recent visit of the Southern Association of Gas Engineers and Managers to Portsmouth [*ante*, p. 230], a slip unfortunately occurred when reporting Mr. L. J. Langford as referring to "the exceptionally low figure at which the Company were supplying gas to their consumers—namely, 3s. 9d. per 1000 c.ft., or barely 7d. more than the pre-war figure." As a matter of fact, the Company's present price for gas is 8·2d. per therm, or 3s. 0·9d. per 1000 c.ft., which is barely 9d. more than the pre-war figure. All gas used for power purposes is subject to 15 p.ct. discount, and that consumed in industrial work to a discount of from 7½ to 15 p.ct., according to quantity.

NEW GAS-WORKS FOR LYTHAM ST. ANNES.

INAUGURAL CEREMONIES.

THURSDAY last was a notable day in the experience of the young and rapidly-growing borough of Lytham St. Annes—a favourite resort for multitudes of people on England's western coast. The day, which was particularly bright and sunny, marked the beginning of a fuller and better supply of gas, at a reasonable cost, through the provision of new and in every respect up-to-date gas-works.

A VIEW OF THE NEW WORKS.

The new works are among the first fruits of the unification of the ancient town of Lytham and the modern town of St. Annes-on-the-Sea, which came to pass some four years ago. Lytham St. Annes is now a fully-fledged corporate borough. After the amalgamation of the two towns, it was found that the old order of gas supply must change, giving place to a newer and larger one. A site for fresh works, to do the work eventually of the existing stations at Lytham and St. Annes, was secured at Eastham, about 1¼ miles from Lytham, where it was quite open country. An opportunity which falls to few was thereby given to the Gas Committee of the Corporation and their Engineer and Manager (Mr. J. H. Ranft)—that of planning new works free from any cramping influences. Mr. Ranft has done his work exceedingly well. His selection of the site, and his lay-out, were confirmed in all their details by Mr. W. Doig Gibb, O.B.E., M.Inst.C.E. It is pleasant to see what regard has been had for the good looks of the place in the future. Trees have been planted all round the site, and attractive houses have been provided for the principal workers. There will also be plenty of room for recreation.

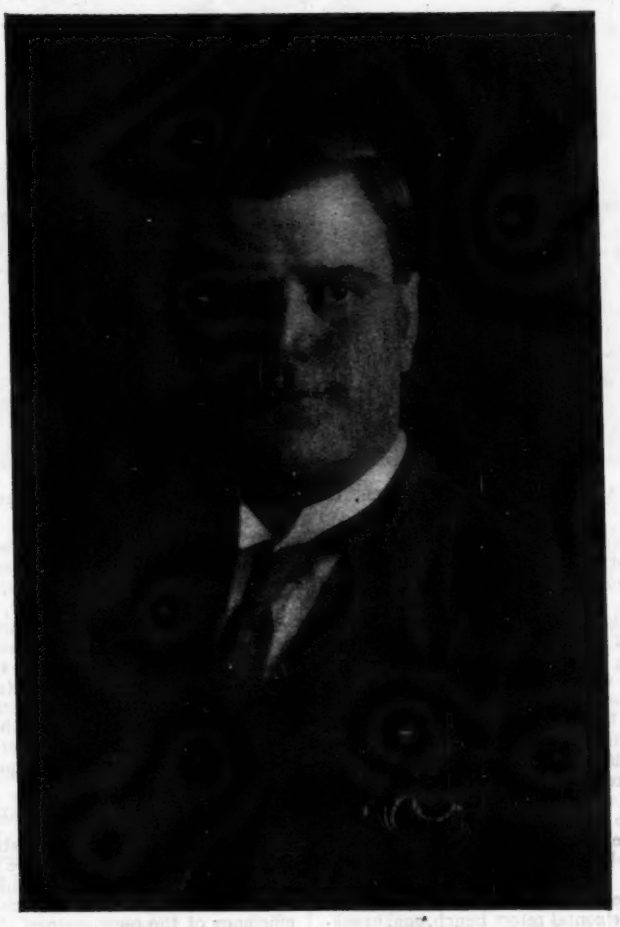
For the opening ceremony there was a large assembly of men interested in gas production from all parts of Lancashire, Yorkshire, and Cheshire. The guests as they arrived in the town were conveyed in Corporation motor buses to the works, over which they were taken by the Chairman of the Gas Committee (Alderman H. N. Whittle) and the Gas Engineer. Later, all gathered to see the Mayor (Alderman C. F. Critchley, J.P., C.C.) charge one of the retorts with the stoking machine, and Alderman Whittle, in his turn, set to work the coke transporter on the discharging side of the bench.

HISTORICAL.

A few words on the historical side of the gas industry in this locality will not be out of place. As far back as 1847 the Lytham Improvement Commissioners, as the governing authority were called, secured parliamentary authority to construct gas-works, and the streets were lighted by gas on Oct. 28, 1850. The authorized capital was £45,000. The total amount of gas made at the Lytham Works for the year ended March 31, 1923, was 128,030,000 c.ft. At St. Annes a Gas Company was registered in 1875, with a capital of £15,000; this company being incorporated in 1898, with an authorized capital of £79,990. The total make for the year ended March 31, 1923, was 93,070,000 c.ft. With the advent of amalgamation between the urban districts of Lytham and St. Annes, and the proposals of the gas company and the Lytham Council to increase the capacities of their gas-works, it was considered that this was a most favourable opportunity to purchase the St. Annes Gas Company, which would enable the borough to give a supply of gas to the consumers without undue expenditure and increase in the price of gas. The undertaking was transferred to the St. Annes-on-the-Sea Urban District Council in September, 1922, for the sum of £87,752.

The growth of the gas supply for the past twenty years is shown by the following figures:

Year.	Gas Made, C.Ft.	Consumers.
1903	97,294,000 ..	3217
1913	152,697,000 ..	4854
1923	221,100,000 ..	5568



MR. J. H. RANFT, GAS ENGINEER.

LYTHAM WORKS.

The plant at Lytham has a productive capacity varying from 200,000 to 500,000 c.ft. per 24 hours. The retort house, of the vertical type, is in excellent condition, though to obtain the best results the retort bench would require reconstruction. The total gasholder capacity is 360,000 c.ft. A railway siding delivers coal direct to the breaker. The maximum daily output is 500,000 c.ft.

ST. ANNES WORKS.

The plant has a maximum productive capacity of 300,000 c.ft. per 24 hours. The retort house is of the direct-fired, hand-stoked, horizontal type, and is worn out. The washers, exhauster, and purifiers are of 500,000 c.ft. capacity. All coal is carted from the goods station, a distance of three-quarters of a mile. The total storage capacity is 350,000 c.ft., and the maximum daily output 323,000 c.ft.

The maximum total output per 24 hours from the combined Lytham and St. Annes Works is 750,000 c.ft., the peak load not occurring on the same day at both works. There are 60 miles of mains.

DESCRIPTION OF THE NEW WORKS.

From a brochure circulated among the guests at the opening ceremony one learned some interesting particulars of the new works and the contractors for the undertaking.

The first section of the works was designed to produce 1,500,000 c.ft. a day, and the cost was estimated at £130,098. Contracts were

placed for a 1,000,000 c.ft. carbonizing plant, and the remainder of the plant for 1,500,000 c.ft. capacity; no holder being contemplated at that time. Subsequently application was made to the Unemployment Grants Committee for assistance in connection with the gasholder, and they granted 50 p.ct. of the interest on loans for fifteen years. The total cost of the plant as erected is about £110,000.

Work commenced immediately on fencing, drains, sidings, roads, &c., the first stanchion of the retort house being erected on Nov. 7, 1923. The Eastham site has the following advantages: Good foundations; excellent siding accommodation from main line; and abundant water supply. It will give cheaper production from modern plant.

The gas made at Eastham is transmitted to the Lytham and St. Annes holders through 12 in. and 9 in. steel mains, 5½ miles long, either by holder pressure or by means of two water-cooled gas compressors. The gas is admitted to the holders by automatic valves, which close when the holders are full. Several governors are placed on the main and connected to the low-pressure district mains, to boost up the supply.

Very few difficulties were experienced in the carrying-out of the excavations and foundation work, as the subsoil generally consists of clay 12 ft. thick. The designing of the main foundations was carried out by Messrs. Drakes, Ltd., of Halifax, who entrusted the execution of the work to Messrs. Saul & Cooper, of Lytham.

The sidings are connected to the London, Midland, and Scottish Railway, and embrace main and subsidiary sidings to the various sections of the plant, totalling 1¼ miles. The main siding is capable of accommodating fifty wagons, or four days' supply of coal. Over 8000 tons of filling was necessary to bring the ground up to formation level, the whole being brought by rail. The contractors for the sidings and filling were Messrs. Wm. Brennand & Sons, of Goole. A steam shunting locomotive, supplied by Messrs. Peckett & Sons, of Bristol, has been installed to handle traffic. This locomotive weighs 18 tons, and is capable of handling 300 tons on the level. Two weighbridges are fixed, one on the main railway sidings and one at the offices, to deal with rail traffic and road traffic respectively, and having relative capacities of 30 and 20 tons.

The main contractors were Messrs. Drakes, Ltd., who were responsible for the retort house, horizontal retort bench, coal breaking, elevating, conveying, and stoking machinery, coke bench, reinforced concrete storage hoppers and coke-handling plant, electric generating plant, electric equipment, new boiler and chimney; the various buildings for housing the different plant—namely, boiler and exhauster house, workshop, stores, meter house, laboratory, garage, weigh office, and Engineer's office; tar and liquor wells; the refixing of certain existing plant; and foundations and excavations.

Messrs. Drakes entrusted the erection of the various buildings for housing the plant to Messrs. Saul and Cooper, and the design of the reinforced coke hoppers and crane gantry to the F.C. Construction Company, Ltd., of Derby.

Coal Handling and Storage.

Coal is stored in a heap stock, in the open, alongside the retort house. There is storage for about 5000 tons. The coal breaker pit is of brick on a concrete foundation, and is 21 ft. by 14 ft. by 17 ft. 10 in. deep. It is provided with twin wagon cradles, which lift the wagon clear of the rails and completely empty it of any size of coal. The lifting arrangement consists of a steel gantry, on which travels an electrically-driven hoisting gear. The tipping gear is the manufacture of Messrs. Drakes.

The coal in the receiving hopper is fed, by means of a jigging tray with adjustable rate of feed, into a two-roll breaker, which delivers the coal into a boot for feeding the elevator, capable of dealing with 30 tons per hour. The elevator delivers the coal into a drag-bar type conveyor, driven by a reversible motor to enable the conveyor to feed future extensions; and the conveyor delivers the coal into the bunkers inside the retort house. This battery of bunkers has a capacity of 48 hours' supply, without trimming. The coal plant is fitted with Drakes' patent automatic cut-out. By this means, should any portion of the plant be brought to a standstill through overload, the remainder of the plant working behind the section cut-out will immediately be brought to a dead stop, thus preventing damage to motors and gearing.

ALDERMAN H. N. WHITTLE, CHAIRMAN OF THE GAS COMMITTEE.

Retort House.

The installation consists of six beds of eight retorts, arranged in one bench. The settings are heated by Drakes' patent tubular regenerator furnaces, which facilitate the transmission of the heat from the waste gases to the secondary air, thereby increasing the efficiency of the regenerators. The arrangement of the air and waste-gas flues in the regenerators allows them to be inspected

readily and cleaned. The producers are fitted with step grates and the necessary water supply.

The retorts are of special ∩ section, and are 24 in. by 18 in. by 23 ft. long, arranged in four tiers. Drakes' self-sealing mouthpieces, fitted with special automatic catches, are bolted to the retorts. All the retorts are built of silica segmental blocks, half of which are the manufacture of the Meltham Silica Firebrick Company, of Meltham, and the other half of Messrs. J. G. Stein & Co., Ltd., of Bonnybridge. Gas is taken off at both ends of the retorts; the ascension arch and dip pipes being 7 in. in diameter. The hydraulic mains are 30 in. wide by 24 in. deep, and form sections over each bed by division plates.

The gas outlet from each section is 10 in. in diameter, and connections are taken from the gas outlet valves into one central foul main over the bench. The bench is controlled by a 12-in. Braddock's retort-house governor, whence the gas is taken to a 24-in. condensing main running to the condensers. Tar off-takes, 6 in. in diameter, are provided from each hydraulic main, and these are connected to an 8-in. tar main leading to the tar towers. The tar main is provided at intervals with cleaning-out boxes fitted with covers. Two tar towers are provided at one end of the bench. By a special arrangement, the liquor is circulated through the hydraulic main and tar towers by a liquor pump. Steel platforms are provided over the retort bench, with access staircases from the stage floor. The bench is strongly braced with steel joist buckstays, and the stage floors are formed of concrete arches sprung between longitudinal lines of steel girders, and paved on top with paving bricks on edge.

Stoking Machine.

The combined charging and discharging machine was made and supplied by Messrs. Drakes, and embodies all the latest improvements in design. It is driven by electric motors of the British Thomson-Houston Company's manufacture, and provided with collectors to make contact with overhead bare copper conductors. The projector is fed with coal from the telescopic shoot by a special chamber leading to the rear of the casing, the chamber being fitted with a device regulating the amount of coal passing. The provision of the rear feed ensures absolutely even charges of any class of coal to be laid to required thicknesses. A special device is fitted in the path at the back feed, for the purpose of throwing any foreign elements clear of the vanes, and so preventing jamming.

The discharger is constructed of a chain wound in a spiral form round a drum, which, in unwinding, forms a perfect rigid strut. A special steel front-piece is fitted to the chain. A lidman's platform is fitted on the rotor side of the machine, from which the mouthpiece lids are opened and closed.

Transporter.

This machine was made and supplied by Messrs. Drakes. It consists of a large coke skip working on an inclined steel framework, the whole being mounted on a steel underframe driven by electric motors. Collectors make contact with overhead copper conductors. There are two electric motors, one for travelling and one for hoisting, both of which operations can be carried out simultaneously. An automatic cut-out switch is provided top and bottom, to prevent over-running of the skip, the attendant only requiring to start it. It stops automatically at the top after tipping, or when reaching its position at the bottom. Working in conjunction with the discharger is a producer charging shoot, which receives the coke and delivers it into the producers. It is arranged to take coke from the two top tiers only. This machine is mounted on a separate structure, and can be coupled-up to the transporter for travelling purposes.

Coke Handling Plant.

The coke from the retorts is delivered by the transporter to the coke quenching benches, six in number, arranged outside the retort house. These benches are constructed of steel framing, which supports a concrete floor paved with firebrick, the benches sloping at an angle of 40° to the horizontal. At the bottom of each bench special gates are fixed, which are automatically opened and closed by the coke skips. The coke is removed from the quenching bench by an automatic discharging skip of 1 ton capacity handled by an overhead electric transporter crane manufactured by Messrs. Drakes. It is then delivered to a battery of reinforced concrete storage hoppers having a capacity of about 100 tons.

The transporter crane runs on a gantry over the storage hoppers, the gantry extending about 76 ft. into the yard. It is constructed of reinforced concrete columns and supports, and, together with the hoppers, is the design of the F.C. Construction Company, Ltd. Under the storage hoppers are four Drakes' patent "cascade" screens, and also two fixed screening shoots which deliver screened coke to railway wagons or carts.

Boiler Plant.

The boiler plant comprises two Lancashire boilers, one new and the other from the St. Annes Works. The new boiler is by Messrs. Clayton, Son, & Co., Ltd., of Hunslet, Leeds, and is 20 ft. long by 6 ft. 6 in. diameter, constructed to work at a pressure of 120 lbs. per sq. in. Wilton's patent furnaces are fitted. Two boiler feed pumps are of the "Cornish" direct-acting type.

Engine and Power House.

The engine and power house has been designed to accommodate electrical generators and equipment, coal gas exhausters, and gas compressors.

Electrical Equipment.

The whole of the electrical equipment has been supplied by the British Thomson-Houston Company, Ltd., of Rugby. It consists of two 30-kw. sets and one 2-kw. set, direct current, 230 volts. One 30-kw. set is to meet day-load requirements, and the other to act as a stand-by. The 2-kw. set is for lighting only.

Gas Engines.

The gas engines for driving the generators are by the National Gas Engine Company, Ltd., of Ashton-under-Lyne. The larger engines, when running at the normal speed of 230 r.p.m., each develop 50 b.h.p. as a constant working load, working on town gas. The small engine, when running at 475 r.p.m., develops 3½ b.h.p. as a constant working load. The water circulation for these engines is taken from the small works gasholder, and is maintained by small centrifugal pumps.

Coal Gas Exhausters.

Two exhausting sets have been installed for coal gas. They are by the Bryan Donkin Company, Ltd., of Chesterfield, and are of the two-blade type. One set has a capacity of 70,000 c.ft. per hour, and the other of 40,000 c.ft. per hour, at 75 and 86 r.p.m. respectively. They are driven by horizontal engines working at a steam pressure of 90 lbs. The exhausters are provided with the latest system of forced lubrication, and steam controlling apparatus is fitted to each engine to maintain a constant suction on the inlet with varying volumes of gas.

Gas Compressors.

There are two sets of water-cooled gas compressors, installed by the Bryan Donkin Company. One set is steam driven, and is capable of dealing with 50,000 c.ft. of gas per hour (temperature 60° Fahr.) at 108 r.p.m., against a pressure of 5 lbs. per sq. in. (90 lbs. steam pressure); the horse-power of the steam engine on full load being 28. Each compressor is provided with water-cooled end plates, and the cylinders have forced lubrication.

The other set is gas-engine driven, and is capable of dealing with 30,000 c.ft. of gas per hour against a pressure of 5 lbs. per sq. in. when running at 120 r.p.m. The engine is of the National Gas Engine Company's "R" type, running at 240 r.p.m. This speed is reduced to 120 r.p.m. by means of reduction gearing. The engine is capable of developing 21·4 b.h.p. as a constant load, working on town gas.

The compressors have been installed for the purpose of sending gas from the Eastham Works to the Lytham and St. Annes holders through 12-in. and 9 in. steel mains 5½ miles long, both being capable of working together against 5 lbs. pressure.

Steel Mains.

The steel mains were supplied by Messrs. Stewarts and Lloyds. These are of the long-sleeve type, double wrapped with Hessian jute, dipped in Angus Smith's solution. The joints are oxy-acetylene welded, and tested dead sound at 30 lbs. per sq. in.

Messrs. R. & J. Dempster, Ltd.

Messrs. R. & J. Dempster, Ltd., of Manchester, were responsible for the condensers, Livesey washer, scrubber-washer, purifiers, works holder, and large spiral holder.

Condensers.

These are of the water-cooled type, to deal with 1½ million c.ft. per day, each being 5 ft. 6 in. by 5 ft. by 25 ft. high. They provide a tube area of upwards of 3 sq.ft. per 1000 c.ft. of gas per hour. The tubes are of the "Bearscot" type, having floating glands at the upper ends, ensuring freedom for expansion and contraction. They are fitted so that any tube can be removed and replaced without disturbing others.

Livesey Washer.

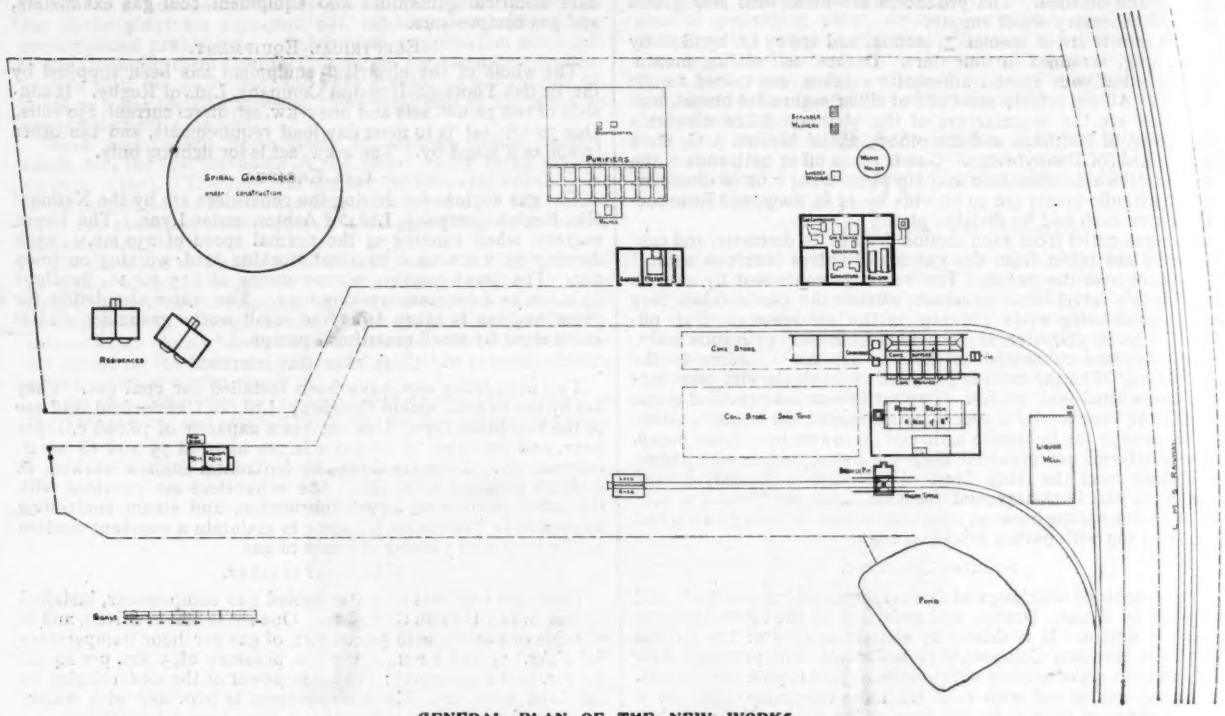
This has a capacity for 1½ million c.ft. per day, and is fitted with the well-known perforated tubes, with side screens, and an adjustable seal. The liquor from the scrubber-washer automatically flows through the Livesey washer on its way to the store tank.

Scrubber-Washer.

The washing surface in this apparatus is 6000 sq.ft., to deal with 1½ million c.ft. of gas per day. When fully at work, it is anticipated that the outflowing liquor will be 12 oz. strength, and the ammonia content not more than 1·5 grains per 100 c.ft. It has a direct-coupled steam engine in the centre, geared so that the speed of the washer is regulated to 4 r.p.m. The manholes are fixed so that the segments of filling may be easily detached and withdrawn, and the shafting is rigidly supported and lubricated. An 18-in. by-pass is provided, together with the usual compartment fittings, drains, and seals.

Purifiers.

These form a continuous box, 100 ft. by 30 ft. by 6 ft. deep, having three divisions. They are of the dry lute type, and are sunk into the ground. Each purifier has four steel covers 12 ft. 6 in. by 10 ft., with holding-down bolts at 18 in. centres, and fitted with ∩-shaped rubber jointing, secured by internal bar. The lifting and travelling crane is of the "Hovey" type, raising and moving the covers in pairs. Two tiers of heavy grids are provided, and the gas has both upward and downward flow through the oxide. The 18-in. centre valve is of the "Bearscot" type, and is fitted with revolving discs. Each purifier has a 3-in. drain,



GENERAL PLAN OF THE NEW WORKS.

thermometer, and test cocks above and below the oxide; and a 48-in. water gauge is fitted to ascertain the pressure thrown by any box. A disintegrator is provided.

WORKS HOLDER.

This is 30 ft. in diameter by 14 ft. 6 in. deep, on the spiral principle, contained in a steel tank, and was fixed to provide a supply to the power house and works before the large storage holder was contemplated. It will later be utilized for the water gas plant.

LARGE SPIRAL HOLDER.

When completed, this will have a capacity of 1½ million c.ft., and comprise three lifts, contained in a steel tank 147 ft. 3½ in. diameter by 33 ft. 8 in. deep. It will give a total pressure of 10½ in., the inner lift giving 6½ in. The holder is provided with all the latest improvements—circular roof purlins resting upon the main bars, which are supported by the lower top curb; vertical stays having the upper ends "kneed" and secured to the dip channel, to maintain these level and prevent tilting, thus ensuring a true path for the carriage rollers; four roller "Bearscot" all-steel carriages, having provision for expansion and contraction, preventing jamming, and to maintain smooth working; and extended sheets above the curb and dips to conserve, and prevent disfigurement of, the painting. The rails are fitted with safety stops, the upper row of sheets being cut and fitted to the angle end of spiral plate to obtain an even bearing throughout and avoid fitting plates to curb and dips. Ladders are provided for each lift, handrails round the top curb, dip channels, and staircase up to the tank balcony. Three sets of anti-freezing apparatus are fitted to the tank and each lift. The tank side is formed of plates from $\frac{5}{16}$ in. to $\frac{11}{16}$ in. thick, and the bottom is of $\frac{1}{4}$ in. thick plates. The inlet and outlet pipes are 24 in. in diameter. The foundation rests upon solid clay, and is formed by a reinforced concrete slab 9 in. to 18 in. thick.

The holder was commenced in April, and, weather permitting, is expected to be in service before the end of the year.

STATION METER.

The station meter, by Messrs. J. & J. Braddock, of Oldham, has a capacity of 60,000 c.ft. per hour; the drum working at 100 R.P.H. The total weight on the foundations, when filled with water, is 49 tons.

THE LUNCHEON.

Leaving the new works, the party proceeded to the Grand Hotel, St. Annes, where luncheon was served. The Mayor presided. The toast list was in itself a work of art. It contained neat little etchings of interesting scenes in the district and a view of the new gas-works.

After "The Duke of Lancaster" had been duly honoured,

Alderman F. S. PHILLIPS, J.P. (the Chairman of the Salford Gas Committee), proposed "The Borough of Lytham St. Annes." In doing this, he said he had a great admiration for the Corporation of Lytham St. Annes, and even more for the Mayor, for the reason that they together were trying to ameliorate the lot of the people among whom they lived, and, particularly, of those to whom fortune had not been too kind. There was no higher conception of public life than this, and therefore he could heartily congratulate the people of Lytham St. Annes upon the excellence of their young borough, now four years old. Touching the purpose of their meeting that day, was it not, he asked, a little extraordinary that, wherever one went, one found that gas was increasing in use, and that with it an inestimable service was being rendered to the community? After a good many years of work for the gas industry, he had no hesitation in saying that gas was not going, but that, on the contrary, it was coming.

The MAYOR, in the course of his response, expressed the hope that what they had done that day would be the beginning of a supply of gas, at a reasonable rate, giving satisfaction to the inhabitants of the borough, and being equally creditable to the heads of the gas undertaking.

In the absence of Sir William Kay, Mr. S. TAGG (Engineer to the Preston Gas Company) proposed "The Borough of Lytham St. Annes Gas Department." They all, he said, realized the potentialities of the borough of which he and others were the guests. There was no community to his knowledge which had such prospects as those which lay within the province of the borough of Lytham St. Annes. It was likely that in a few years it would be the chief resort on the West Coast of England for persons in quest of health and recreation; and in its growth as a borough it would doubtless remember the importance of an adequate supply of gas at a reasonable cost. The gas industry gave public and social service to the community at a lower cost than, he believed, electricity would ever be capable of, and in so doing it was helping in a large degree to purify the air and give people more sunshine. The Gas Committee had a public duty, and this, in his judgment, would be faithfully discharged. He congratulated the Committee on their new works, and their Engineer on his achievement. Mr. Ranft had laid his plans on the broadest possible basis; he had designed the works, not only for a few years, but to serve for the future, and to bring home to the people of the district the many advantages which gas conferred.

Alderman H. N. WHITTLE (the Chairman of the Gas Committee), in his reply, said the Committee's thanks were due to the Gas Engineer for his work.

The MAYOR next proposed the health of "The Contractors," which Mr. WILFRID DRAKE (Messrs. Drakes, Ltd.) and Mr. H. S. KNIGHT (Messrs. R. & J. Dempster, Ltd.) acknowledged. Mr. Drake concluded his speech by presenting, on the contractors' behalf, silver salvers to the Mayor and Alderman Whittle as mementoes of the proceedings.

The remaining toast on the list, "The Visitors," was entrusted to His Honour Judge BRADLEY, and was responded to by Alderman CLARKE (the Chairman of the Gas Department of Chesterfield) and Councillor HAMER (the Chairman of the Blackburn Corporation Gas Committee).

Firebrick in Gas Manufacture.—Discussing the use of firebrick in gas manufacture, Mr. Claude C. Brown, Gas Engineer to the Railroad Commission of California, states that, from a thermal point of view, magnesia would make the best all-round checker brick. Its use for this purpose is not practicable, however, for the reason that it does not possess sufficient physical strength, and is liable to rapid spalling when subjected to sudden and wide variations in temperature. Carborundum absorbs heat rapidly, but is very brittle, and has no distinct advantage in generators over the average silica-clay firebrick for thicknesses of 2·5 in. or under, when the periods of reversal or cycles exceed 25 minutes each. An ideal brick for chequer work would be one possessing the thermal conductivity of magnesia combined with the refractoriness, physical strength, and resistance to slagging, abrasion, corrosion, and spalling possessed by the higher grades of silicious-clay firebrick.

AMERICAN GAS ASSOCIATION.

Annual Convention and Exhibition at Atlantic City.

[FROM AN AMERICAN CORRESPONDENT.]

The Sixth Annual Convention and Exhibition of the American Gas Association was held at Atlantic City, New Jersey, from Oct. 13 to 16. In attendance and interest it surpassed all previous gatherings. There were about 1500 at the opening general session on Tuesday morning, Oct. 14, at which President John B. Klumpp, of Philadelphia, presided. The size of this initial audience is typical of the scale of the convention and accompanying exhibition, and is a true indication of the even greater meetings to come in the future as the value of the Association to the gas industry becomes still more clear. The total registration of members and guests amounted to 3640. The use of sound amplifiers enabled each speaker to be heard plainly throughout the large room, without raising his voice.

Prefacing his annual report, Secretary-Manager Alexander Forward read greetings from the Gas Associations of Switzerland and France and from the Institution of Gas Engineers and the British Commercial Gas Association. Somewhat later in the proceedings, the Presidents of these societies were elected to honorary membership. If your correspondent wrote with an inspired pen, his account of this meeting might hasten the day when your country could send the greetings of one association only, truly national in its scope and in its service to your gas industry. In his message, Secretary Dunn referred to the interesting fact that President Klumpp was the sole American member of the Institution.

Mr. Forward's report contained many significant facts about the industry and the Association. Gas sales in 1923 were 384,000 million c.ft.—a 10 p.ct. increase over 1922, and 100 p.ct. over 1913. In 1923, 3500 miles of mains were laid and 417,000 new consumers added. The Association has 579 gas companies, 293 manufacturers, and 2473 individuals on its membership rolls. Four hundred members have served on committees during the year; and here are some of the most important accomplishments: In the Accounting Section, an analysis of gas company statistics, and a reduction of 36 p.ct. in premium for insurance against cases of public liability. In the Commercial Section, a monthly sales service with 750 subscribers, a committee on home service, and the first summer sales conference. In the Industrial Gas Section, two splendid booklets, "House Heating" and "Combustion"—each a splendid example of the Association's value to the members—forerunners of other equally valuable treatises. In the Manufacturers' Section, the magnificent display of over 200 exhibitors covering every phase of the industry. In the Publicity and Advertising Section, the education of the investment bankers and the Press to look to the Association as the fount of information about gas matters. In the Technical Section, good progress in the preparation of an authoritative treatise on manufacture and distribution, comprehensive reports on the present state of the art of water gas and coal gas manufacture, and on the measurement of large volumes of gas.

The Treasurer's report showed total receipts of $285,000, of which fees from company members were $155,000. The total expenses were $305,000, of which $108,000 were salaries. Without the $155,000, the $108,000 would not be available. Assets in cash and securities amounted to $73,000, and, adding other items, gave total general assets of $98,000. Special funds included $10,000 for the gas treatise and $20,000 for the Association's testing laboratory.

Next in order came the President's Address, with Vice-President C. O. G. Miller in the chair. Mr. Klumpp attributed the great success of the Association to its faithful adherence to the code of ethics on which it was founded—to develop the gas industry and to co-ordinate its activities for the service of the public. It was becoming increasingly evident that no municipality could prosper unless its public utility companies were prosperous, and therefore able to furnish the service necessary to any growing community. Existing regulation of utilities was defective in not providing a special incentive for efficient operation. He referred to the recent recommendation of the Executive Board that a statewide standard of heating value is not advisable, as each company should be free to choose the particular standard best adapted to its local conditions. He spoke of the testing laboratory for gas-using appliances soon to be started under Association control, and of the effect of such a laboratory in improving the conditions under which gas is used in domestic appliances. He emphasized the necessity of educating employees and the public in the many details of the gas business. He recommended more careful study of Association proceedings, and the benefit to be derived by the use of Association reports and papers as subject-matter for discussion at meetings of State gas associations.

At this time occurred the election of a President, Vice-President, and Treasurer. Their names and those of the other officers elected are given below:

GENERAL OFFICERS.

President.—Harry C. Abell, New York, N.Y.
Vice-President.—Charles L. Holman, St. Louis, Mo.
Treasurer.—H. M. Brundage, New York, N.Y.

Members of Executive Board to serve two years:

D. D. Barnum, Boston, Mass.
R. B. Brown, Milwaukee, Wis.
Howard Bruce, Baltimore, Md.
M. B. Daly, Cleveland, Ohio.
Henry L. Doherty, New York, N.Y.
Oscar H. Fogg, Baltimore, Md.
Charles A. Munroe, St. Louis, Mo.
D. J. Young, Tacoma, Wash.

The members stood in their places during the reading of the names of those who died in the past year.

Again Atlantic City was chosen for the next meeting place. It is pre-eminently suited for this purpose, and each year is the only location which, after careful scrutiny by those whose inclinations would lead them to vary the place of meeting, is found to possess the necessary qualifications for a gathering of 3500.

John Moody spoke on the "Future of Gas Company Securities." He said that much education of the security buyer as to the innate worth of these securities was necessary and advisable. These buyers needed to be told that the gas business was an essential industry, and therefore only slightly affected by cycles of business depression. Next the large and attentive gathering listened to an address, very indicative of the present era, by Miss Dillon, Manager of the Brooklyn Borough Gas Company. She spoke on "Humanizing a Gas Company," and surprised her audience by announcing twenty-nine years of service. She pleaded for newspaper advertising, employees pensions, employment of college women in home service work—"women to reach women"—and the cultivation of the spirit of service in every employee from the president down. Her address was replete with humour and experience, and received enthusiastic applause.

The second general session occurred Wednesday morning. The Secretary-Manager read a letter from Mr. F. W. Goodenough, acknowledging the cabled greetings of the Association to the meeting of the "B.C.G.A.," and telling of the present prosperity of British gas companies. There was also a telegram from the Canadian Gas Association.

The Committee on the Standardization of Gas Appliance Specifications reported a new design of water-heater cock. Certain other changes had been delayed, pending the establishment of the new testing laboratory. This laboratory, as explained by the Chairman of the Committee having the project in charge, will test and approve gas appliances from the standpoints of safety and performance. Its expense for the first two years had been underwritten by contributions from gas companies, based on meters in use. It was hoped that most of this money could be re-imbursed from the testing fees. The laboratory was endorsed by the appliance manufacturers, who had donated the equipment.

The Committee on the Education of Gas Company Employees reported that far too little was being done in this field. Of especial importance was the education of the employees in direct contact with the public. The Committee would prepare booklets on manufacture, distribution, utilization, and service. Another booklet, intended to convey a general knowledge of the business, was now ready, and should be bought freely by each company for distribution to employees and schools. Mr. Charles A. Munroe, formerly of Chicago and now at the head of the Laclede Gas Company, St. Louis, presented some very interesting data indicating that general house heating by gas may not be so impossible, from the load factor standpoint, as is now generally supposed. The Committee on Co-operation with Educational Institutions provided thirty-two lectures at nineteen colleges and additional lectures at high schools. For the coming year, a repetition had been requested. Through these lectures, college men were encouraged to enter the gas business, and the industry was made known in circles where such knowledge might be of great value in the future.

Wednesday evening was devoted to a "Public Relations Symposium." Certain phases of the relations between public service commissions and utility companies were described by the Hon. A. G. Patterson, of the Alabama Public Service Commission. Mr. C. M. Cohn spoke of "Public Relations in Baltimore." A most important subject was treated by Mr. Martin J. Insull—"Customer Ownership. What It Has Accomplished So Far; Along What Lines Can It be Extended; and How Can Its Fullest Benefits be Realized by the Utilities?" A new feature of convention proceedings, and one of great human interest, was the presentation of six medals to gas company employees for the saving of human life. Five were gained by resuscitation of partly asphyxiated persons. Some very pleasing songs from a chorus of forty voices alternated with the addresses; and though the room seated 700, it was crowded, and many were unable to gain admittance.

The third and last general session opened on Thursday morning with the adoption of a resolution urging every member to vote at the coming national election. This resolution is a symptom of growing uneasiness at the small percentage of the electorate who vote. Accompanying the report of the Accident Prevention Committee was a partial demonstration of the prone pressure method of resuscitation. Then followed "What is Coming in the Heating Field?" by Mr. Floyd Parsons, to some extent a fanciful, but still a thought-provoking, talk of the future field for gas as a heating agent in industrial processes and for space heating generally. Dr. E. R. Weidlein, Director of the Mellon Institute of Pittsburg, spoke most interestingly of "The Value of Industrial Research to Industry." He said that 5 million pounds were created each year

as a result of past researches. In the baking industry, $40,000 a day had been saved by improved yeast treating. Two hundred millions had been added to the yearly value of the cotton crop by the discovery of a new use for cotton seed oil. His speech was an effective demonstration of the value of concerted research to any industry. Dr. Paul W. Ivey told of the necessity of "Marketing Utility Service," and gave examples from the experience of large advertisers in this country. To create a constantly expanding demand for gas required continued effort, but the reward of such effort would be just as sure in gas sales as it always proved to be in other commodities. The general sessions were brought to a fitting close by the Hon. George Cortelyou, the First President of the Association, who spoke of its early days and modest beginnings, and how it had so wonderfully justified the hopes of its founders.

So far only the most important events of the general sessions have been touched on; and yet this account is reaching an undue length. No longer is it possible to convey by written word any adequate conception of a great national industry taking annual note of its condition. A few sentences must suffice for the rest of this story. Beginning Monday, and ending Thursday, there were held each afternoon from two till five the following sectional meetings: Accounting, three; Commercial, three; Industrial Gas, two; Manufacturers, one; Publicity and Advertising, one; Technical, five. Three of these technical sessions were held in parallel on Thursday afternoon, being devoted respectively to manufacturing, distribution, and chemical questions. The total length of all sessions was fifty-three hours; and experience shows that the improvement of an industry is a function of the time devoted to mutual counsel.

Never was there a convention that did more and better work, or one held under fairer skies. Atlantic City was at its best, and the great Convention Hall at the end of the long pier, open to the sunlight and the gentle ocean breeze, supplied a fitting setting to the earnest words of the speakers. It is not strange that so far not a word has been said about entertainments and outings, for work was the keynote, and pleasure was not allowed to interrupt, except in the evening. On Tuesday occurred an informal reception to the officers, followed by dancing. On Thursday there was a theatre party, but many did not remain, leaving for home in the early evening eager to "carry on" another year in the spirit of service to the finest industry in the world, inspired by the meeting just past, and looking forward to a still better one in 1925.

REVIEW OF REPORTS AND PAPERS.

[First Article.]

The "American Gas Journal" are to be congratulated upon the enterprise they have displayed, again this year, in publishing daily issues during the convention which contain an illustrated account of the proceedings.

Coke Committee Report.

During the past year the aim of the Coke Committee has been to create and develop interest among the gas industry in coke; to indicate the pertinent points of coke manufacture, preparation, and merchandizing; to act as a clearing house for any and all inquiries pertaining to coke; and to pave the way to increased activities for future Coke Committees. They find that, in spite of the fact that there are many companies who are cognizant of the value of a progressive coke policy, the general tendency throughout the industry is to let "well enough" alone. The future of the coke industry is, however, dependent to a large degree upon the attitude taken up by the gas engineers of to-day.

Various members of the Committee have prepared articles, which are incorporated in the report. In the first of these, Mr. A. W. Grant, jun., says it would appear as though fine pulverization was conducive to better mixing of coals, and assisted in the formation of larger, less fractured, coke, besides offering greater coal surface per unit weight. It should be recalled, however, that the weight of a unit volume of coal increases up to a certain point with increased pulverization, and then the weight decreases; hence a maximum oven charge requires a definite fineness of coal. This fineness varies with different coals and ash contents, and may, within practical limits, change the charge by as much as 4 p.ct., or more, one way or the other. Fineness of coal is, therefore, of considerable practical value in increasing plant capacity, while at the same time it gives a tendency towards a more compact charge, which conduces to increased yield of sized coke, and is one reason for improved coke structure with greater use of low volatile coal. Bearing these two points in mind, it is apparent that, over a certain restricted range, one is striving to satisfy two opposing conditions—extreme fineness and maximum weight of charge. Thus no general rule can be laid down.

A subject which Mr. Grant holds is too little considered, and still less understood, is that of coke degradation. The yield of sized coke can be maintained at a maximum only when the coking mixture is "in balance"; while a surplus of cementing material tends towards more porous and friable coke. He points out that there is yet another angle from which to regard coke degradation. Under some conditions it may be wise to forfeit coke size and a small amount of surplus gas, in order to bring about increased degradation within the carbonizing chamber—that is, primary degradation—by means of higher final temperatures. For such conditions, an increase in primary degradation and increase in the fuel gas consumption may be more than offset by the attendant advantages of a tougher coke and the subsequent reduction in "secondary" (during handling and screening) and stock-pile degradations, especially if the coke output has to undergo crushing.

After summing up the several more important factors that should be considered in selecting a coal mixture, Mr. Grant adds: Such a prepared coal mixture as these specifications call for can best be had by the selection of a single coal of intermediate volatile matter, rather than a number of coals requiring individual selection and proportioning as steps in attaining the most gratifying results. In short, I think that the "one-coal mixture" is the *desideratum* in the matter of selecting and preparing a coal charge. This latter recommendation fails, however, to be of general practical value, for the reason that there is not enough available coal of such description as to meet the demands of the coke and gas industries. Nevertheless, there does appear to be more available than is used in such plants as it can be economically employed in. The many advantages attending the adoption of such a coal charge do not seem to be very generally recognized.

Mr. Harold J. Rose, of the Koppers Company, dealing with technical progress in the study of coke and its value to the industry, expresses the opinion that the great progress made during the past two decades in the technology of coke manufacture has not been accompanied by an adequate improvement in methods of evaluating coke; it is only within the past two years that coke testing has begun to receive the attention which it deserves. Coke specifications seldom contain specific limits other than those affecting its size and the permissible amounts of various impurities; but such specifications are admittedly inadequate. Two cokes might seem quite similar so far as the usual analyses and physical tests could indicate, and yet these cokes might vary greatly in the efficiency with which they could be used for a given purpose. Such differences are now ascribed to variations in the combustibility of cokes, and much work is now being done on this subject. The term "coke combustibility" has at least two distinct meanings. One usage refers to the specific re-activity or chemical activity of coke; whereas the second meaning, as used by the practical man, refers to the rate at which coke can be utilized in a given commercial appliance, while maintaining satisfactory operating conditions. Mr. Rose is not prepared to indicate a preference for any of the existing methods of evaluating coke, and believes that improved ones will be developed from investigations now being carried out.

Some notes on improving the quality of coke produced in horizontal retorts are contributed by Messrs. John H. Doerres (Laclede Gas Company), John L. Eigenbrot (Lowell Gas Company), and R. L. Fletcher (Providence, R.I., Gas Company). It was decided to see what benefits would accrue from using a mixture of coals in horizontal retorts, instead of any one kind of coal only; and particulars of the results obtained with different mixtures are set out. The coke produced in the retorts with the mixed coal was much stronger than coke that was produced with the use of 100 p.ct. Westmoreland coal. With a higher percentage of low volatile coal than 10, the coke constituting the upper part of the charge was much more porous than that which constituted the lower part. In fact, a good deal of spongy coke was observed with the use of a high percentage of low volatile coal that also had a high percentage of pulverization. In bye-product oven practice generally, coal pulverization almost invariably leads to a very gratifying increase in coke size and strength.

The addition of low volatile coal to a high volatile coal does not usually increase the density of a coke. In fact, in coke-oven practice, a moderate amount of low volatile coal is sometimes added to open-up the cell structure. A small quantity of low volatile coal oftentimes will increase the size of the cells, and frequently will increase the porosity. However, no fixed rule can be made, although in general it may be stated that low volatile coal increases the size and strength of the coke produced. While the addition of low volatile coal reduces the tendency towards sponge formation in bye-product coke ovens, it confers new properties upon the plastic coal mass, which possibly may lead to the continued formation of porous coke in horizontal retorts. The full value of low volatile coal in a mixture cannot be obtained without pulverization when the coals are used in ovens. On the other hand, from the results obtained in the horizontal retort tests at Providence, Lowell, and St. Louis, it does not seem that any definite conclusions can be arrived at without further investigations along this line. It is, the writers feel, extremely difficult to make a fair and comprehensive comparison of two dissimilar cokes or coking processes in a brief report, or in one based upon a limited number of tests. Furthermore, perhaps it is not always fair to judge two coking processes by the results obtained by coking the same coal mixture, since each may require a definite type of coal to produce the best results.

(*To be continued.*)

London and Southern District Junior Gas Association.—The President (Mr. W. Newton Booth, B.Sc., Assoc.M.Inst.C.E., of Woolwich Arsenal) will deliver his address at the opening meeting of the session, which will take place at the Westminster Technical Institute, S.W., on Friday evening next (Oct. 31), at 7.30. During the meeting a presentation will be made to Mr. Walter Grogono, the immediate Past-President.

ACCIDENTAL DEATHS BY POISONING FROM PUBLIC GAS SUPPLIES.

By NORTON H. HUMPHRYS.

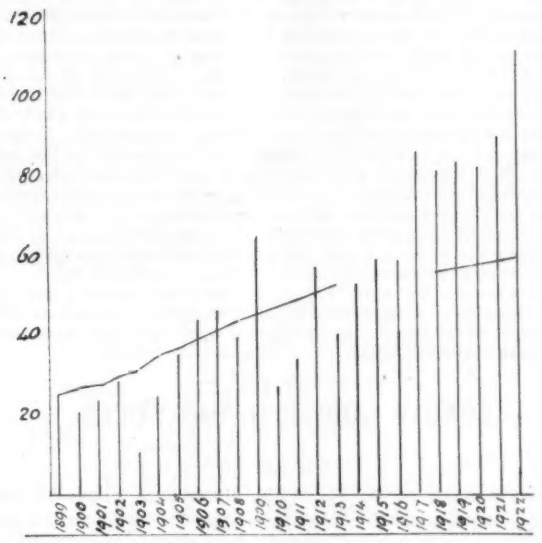
THE gas industry at large is enormously indebted to Mr. W. J. A. Butterfield for the labour embodied in his report on this important subject, which has already received extended notice in these columns (Vol. 167, pp. 587, 637). The following remarks may not be out of place. Incidentally the subject has received some attention in the course of Departmental Inquiries as to the influence of carbon monoxide; and much newspaper correspondence has been devoted to it. Some parts of the published information have been so obviously biased, and originated by sources other than the benefit of the public or the assistance of gas undertakings, as to render a competent report by a recognized authority very desirable to all parties concerned. Though slightly coloured here and there with the traditions of the elders, the transparent impartiality and care to put all data in correct perspective (which is a prominent feature in this report, as in all other reports issued under the authority of the Board of Trade Gas Administration Department) stands in sharp contrast to some of the "evidence" that has previously been forthcoming. In one sense, the report may be regarded as lengthy; but if the magnitude and nature of the subject are fully appreciated, it is seen to be really a remarkable example of compressing a large amount of information into compact and portable form, more brief, and at the same time more complete, than anything preceding. It enjoys the distinction of being fathered by an authority whose practical and scientific qualifications for the task are almost unique, and who has applied original methods to its elucidation, with the result that it possesses living and practical, rather than dead and academic, interest and value.

Special novelties included are a classification of gas undertakings and accidents, and a recognition of the fact that the seller of gas has some interest and responsibility with regard to appliances on the consumer's side of the meter. Hitherto, accidents have been simply recognized as occurrences of similar character, and a risk to which any one of the users of gas in the United Kingdom is equally subject. But the facts as now set forth show that out of 754 districts examined, no less than 538 have not experienced a fatal accident within the last 10¾ years. If non-statutory concerns were included, and they mostly come under the same category, the non-fatalists would probably be doubled; while the additions to the larger classes would be negligible. The remaining 100 show 91 deaths in that period. Of the medium-sized undertakings, 58 record 66 deaths; 4, of urban district character, 19; and 54 large undertakings share the difference of 642, making a total of 818, of which 661 are confined to 58 undertakings, out of something like 20 times that number. A fixed set of regulations applied to the whole would be something like caning every boy in a school numbering 1200 pupils, when the delinquents did not include more than 58. This recognition of different classes of gas undertakings may have a far-reaching effect. At present the practice is in the direction of making one size of uniform only, and that sufficiently large to fit Metropolitan undertakings, irrespective of varying statures and girths, with the result that many small concerns are encumbered with a Parliamentary suit that is too big. Any regulations that may be the result of this report should not be compulsory on the whole 1200, but a limit might be set—perhaps an average of two deaths per annum over a period of not less than ten years. Many at present well within the mark would be inclined towards effort in the way of maintaining their position.

The wide differences in conditions and habits of livelihood in towns of 10,000 population or less, as compared with those numbering 20 times as many, may explain the immunity enjoyed by the small class. In the first-named, with the exception of the few public institutions, little or no gas is used in the night. Walk through the principal streets at any time after 11 p.m. and before 6 a.m. Hardly a single individual is to be seen, and all labour is practically confined to the daytime. Compare this with the busy hum in the large town, continual traffic in the streets, a steady stream of travellers leaving or arriving at hotels, railway stations, late amusements, factories running all night, &c. More than one family in one house is an exception rather than the rule in the small town; but in the other there are large sets of flats, model dwellings, and other buildings that take in a number equal to the entire population of a long country street. Crowding and activity increase liability to accident.

The reduction of an abstruse and many-sided subject to practical and workable conditions is a difficult task; and in dealing with such wide ratios as one to five or six figures, events that for lack of more appropriate terms are generally defined as chance or misfortune, may tip the scale one way or the other, and that to a greater extent than a recognized controlling cause, with the result that the latter may receive credit or blame that it does not deserve. As much is evident if the table on page 12 of the report is presented in diagrammatic form. The expectations show a fairly straight and rising line. During the first six years, and again in the seven years 1908-14, fatalities were below expectation; but in the war years they soared above—which is accounted for by the numerous emergency conditions to which the public gas supply was subjected. The rise in 1922, which so far as can be judged will not be repeated in 1923, is as inexplicable as the low figures in 1903, 1910, 1911, and 1913.

Many circumstances likely to be concerned have altered within the last 25 years; but they move steadily and consistently one way or the other, and are not of a fluctuating character. They do not



explain variations of as much as 50 p.ct. in either direction. Supply pressures have been increased, notably within the last two or three years, until they stand at double those of 1899. Important improvements have been effected in gas fittings and appliances, the water-slide gasalier has practically disappeared, and seamed tube, which at the most was not more than a small part of the whole, and that usually in sight, is following suit. I venture to believe that gas office complaint books show a remarkable reduction in the number of escapes reported, even since 1899, and certainly subsequent to an earlier period, when gas undertakings were accustomed to put instruction for dealing with escapes, or caution not to use a naked flame, on the quarterly bills. At that time, the rental office was troubled with refusals to pay the whole of the amount claimed, on the ground of alleged leakages; to-day, this sort of demand is practically obsolete.

Concurrently with general advance in education and refinement, consumers now apply a greater degree of care and intelligence to the regulation of gas consumption. Living and sleeping apartments are more spacious, and open windows are now the general rule rather than the exception. The effects of prolonged experience have spread into all parts of the country, with the result that the demand for cheap pendants and brackets is largely reduced, and the ornamental style, the chief feature of which was the addition of cups and vases that collected dust and scorched insects to an extent sufficient to confer a musty odour (for which the gas was held responsible) on a gas lighted apartment, is extinct. A simpler construction, and fewer swing or water joints, tend towards safety. Though much remains to be done in the way of taking out unsound or inefficient appliances, the advances already effected are sufficient to be taken into consideration as having assisted the object in view.

I have sometimes idly speculated as to the position of the gas industry to-day, supposing that, from the first, all gas consumers excepting those situated in low-level districts had been supplied with efficient pressure regulators at the meter, capable of maintaining under all *plus* variations a set degree of pressure, all materials used tested for soundness, and the same on every installation or extension before being put on commission. Few of the eight million consumers in the United Kingdom have reached such a degree of refinement; but the regulations suggested in the report would be a long step towards that desirable end. Excessive and variable pressures are at the bottom of the complaints respecting sooted ceilings and imperfect combustion—at one time not uncommon, but rarely met with since the introduction of the incandescent type of burner, which is more amenable to excessive pressure than the flat-flame variety.

The supply pressure to which a defective fitting was exposed at the time when it was the unfortunate cause of a fatality is an important factor. That increase of pressure tells in favour of safety by rendering defects more evident to the organ of smell, is shown by general experience. Many of the "safe" undertakings above noticed are now supplying 40 to 60 tenths at the works governor; and prior to the use of incandescent burners, they had found half that figure to be sufficient. But the quantity of gas that escapes into the atmosphere from a split or a defective moving hinge, is proportional to the square root of the pressure. A slight defect under 20-tenths pressure may not be sufficient to induce an injurious atmosphere, but subject to an increase to 40 tenths might pass the limits of safety. The natural ventilation, already fully occupied under 20 tenths, would not be capable of assisting an increase of 50 p.ct.; or, to put it in another way, a

straight coal gas under 40 tenths may be as harmful as mixed gas under 20 tenths.

Classification is applied to description of accidents, with a view to separating from pure chance or misfortune those that suggest partial or complete prevention. Hitherto, no distinction has been the rule. One accident is as bad as another, and the tendency is to put the blame, to some extent at any rate, on gas or the gas company. Some seem to go so far as an inference that the bounden duty of the company is to prevent accident, and that the mere fact of such occurrence is evidence of some slackness or incompetence at the gas office. Accidents on road or rail are freely accepted, though far more numerous than those due to gas, without prejudice to steam engine or petrol motor; but gas is associated with casualties for which it is not responsible. Neither the gas nor the company can reasonably be blamed for the acts of suicides, drunkards, and children who have not arrived at that somewhat dubious stage of existence known as "years of discretion," or for recklessness, lack of common-sense, or the acts of careless or incompetent workmen. If all accidents due to contributory causes are cut out, the already Lilliputian proportion of fatalities to consumers gets much nearer to vanishing point.

Whether on the "safe" list, or at the other extreme, gas undertakings have always been anxious to prevent accidents, and willing to adopt any means to that end which admit of reasonable and practical application.

SUNDAY LABOUR IN GAS-WORKS.

By "Observer."

In efforts aimed at the shortening of hours of labour by gas-workers two main motives have been at work—humanitarian and Sabbatarian. Those espousing the former cause have used as the chief argument that existing hours were arduous; Sabbatarians were actuated by the conviction that the Lord's Day of Rest should be observed as a Divine obligation, and everything possible done to achieve this.

On the humanitarian side a vast change has taken place on gas-works from the conditions prevailing thirty or forty years ago. Then stokers commonly worked shifts of twelve hours per day for seven days each week, a total of 84 hours; labourers worked from 50 to 60 hours per week, not counting overtime. To-day, the eight-hour shift for stokers, &c., giving 56 hours for a seven-day week, is general. Practically the sole exceptions are small gas-works which are not big enough to employ more than one or two regular stokers. The labourers' week is not more, and occasionally less, than 48 hours.

Hours of Industrial Employment Bill.

A Bill was presented to Parliament on July 14 last entitled "Hours of Industrial Employment Bill, 1924." Its object is the ratification, as regards this country's share in the matter, of a conventional agreement made at a general conference of the International Labour Organization of the League of Nations at Washington in 1919. The Bill was a Government measure; and though the unexpected collapse of the Labour Government has held it up, there is little doubt that, whatever Government succeeds to office, the Bill will come before Parliament for consideration in an early session. Its terms have been widely scrutinized by all kinds of industrialists, including those connected with public gas supply. It will be a considerable source of satisfaction to those engaged in the gas industry, whether as employers or employees, that the measure, except in unimportant details, hardly affects the industry at all. Over 90 p.ct. of the employees engaged in the gas industry already come within the prescribed limitation of 48 hours for day workers, and 56 hours for shift workers who are engaged in processes which "are required to be carried on continuously by a succession of shifts." Whatever residuum there may be, 10 p.ct. or less, that oversteps these limits is accounted for by small gas-works, and by odd men engaged on bigger works in such jobs as watchmen, gatemen, &c., where the duties are comparatively light.

Hours of Sunday Labour.

At a time like this, when Governments seek by Act of Parliament to limit hours of labour, it is not unseasonable to review the progress made in limiting the hours of labour on Sundays. There have been comprehensive inquiries in the past to ascertain the extent of the reduction in the hours worked on Sundays, such inquiries being made either directly or indirectly at the behest of the Lord's Day Observance Society of London. The inquiries began in 1869, and were repeated in 1874, 1884, 1891, and 1897. Then in 1902 Mr. R. G. Shadbolt read a paper on "Sunday Rest for Gas Workers" at the June meeting of the Incorporated Gas Institute—a task he undertook largely as the result of pertinacious pleading by Dr. Gritton, a pronounced Sabbatarian. Thus, six general inquiries were made in a period of 33 years, the last four in a space of 18 years. Now 22 years have elapsed since Mr. Shadbolt tabulated and commented upon the results of his arduous labours dealing with 443 replies received in response to 1600 inquiries sent out. Although there was a preponderating number who did not reply, those who did represented 67·04 p.ct. of the total gas then made in the United Kingdom.

It is not intended here to refer more than briefly to the conditions as reflected in 1902 by Mr. Shadbolt's paper. They were summed up as "unmistakable signs of a movement in the right direction." The inquiry that immediately preceded Mr. Shadbolt's reported "some considerable advances towards fuller Sunday rest." Thus the considered opinion, based upon inquiries made 22 and 27 years ago, was that Sunday labour was in a diminishing ratio. Of the 438 undertakings embraced in the 443 replies received in 1902, 218 stopped gas making for some portion of Sunday, and 220 did not; those stopping being 52·39 p.ct. of the total output in the United Kingdom. Some of those practising stops did not do so the whole year round, while only seven undertakings stopped for the full period of 24 hours.

In spite of the comprehensiveness with which replies were dealt with, it is impossible, from the figures given in the paper, to arrive at the ratio which the periods of Sunday stoppage on gas-works at that time bore to the full working day. Thus we cannot say what was the *average* percentage of stopped hours over the 52 Sundays of the year, either (1) over the works indulging in total or partial stoppage, (2) over the total number of gas-works, or (3) over the total number of men normally employed on gas-works as (*a*) day workers and (*b*) shift workers. Without such data it is not possible, with certainty, to say that cessation of work either (*a*) actual or (*b*) comparative is on the increase.

Although the 218 works in 1902 which stopped for some portion of Sunday represented 52·39 p.ct. of the total output of the kingdom, this figure, for the reasons given in the immediately previous sentences, must not be misinterpreted as the ratio of stoppage to a balance of 47·61 p.ct. representing working. The actual duration of stoppages will give a much lower figure, since they are mostly for but a portion of Sunday, and in many cases, even then, for a limited number of Sundays in the year.

Reasons Given for Non- or Partial Stoppage.

We may review some of the reasons given 22 years ago for being unable to stop, or for stopping only during a few hours of the Sunday, and see how the developments of the intervening period have tended in the direction of increasing or decreasing Sunday labour.

Storage.—The preponderating reason for not suspending carbonizing on Sundays in 1902, as indeed at all times when the subject of Sunday labour has been in review, was "insufficient storage." It is safe to say that to-day this difficulty, in the aggregate, will be more acute than it was in 1902. If an inquiry were made as to the ratio of storage to the maximum day's make, or the average of the maximum week, it would be found that works operate to-day with a much finer margin than formerly. The load is more regular over the various hours of the working day. The general adoption of cooking by gas, at its maximum in the summer months, has brought the output in the six summer months up to about half that of the six winter months, whereas the latter used to be four or five times the former. A more regular load has reduced the necessity for big storage capacity, either as a means of economical production, or of getting over the adventitious peaks (now less pronounced) produced by fogs, &c. The greater use of water gas plants as compared with twenty or thirty years ago has also reduced the need for big storage capacity, owing to the celerity with which such plants can be brought into operation. Apart from considerations of economy or emergency, the high costs which have to be faced in providing extra storage has been a material factor in recent years in postponing an expenditure which, though desirable, can, at some inconvenience in working, be put off. It therefore happens that to-day many works are preferring the inconvenience of defective storage to the high capital costs and annual interest and maintenance charges that would be incurred by effecting the remedy.

Defective or Unsuitable Plant.—Another reason often quoted for inability to practise any measure of Sunday stoppage was defective or unsuitable plant. While it is safe to say that the condition of gas-works plant has undergone a vast improvement during the last 22 years, it cannot be urged that the newer plant installed is improved in suitability for stopping. During this period vertical retorts have made vast strides. Those who work them know that continuous operation is infinitely better for the plant than shutting-down, even for short periods. Not only has a certain degree of coal selection to be practised, but ease of working verticals is contingent upon regularity, so that once the right rate of throughput for the best results has been arrived at, there is the strongest possible call to "let well alone." Anyway, it would be decidedly interesting to have the considered views of "continuous vertical" practitioners upon the wisdom or otherwise of shutting-down systematically for 8, 12, 16, or 24 hours on a Sunday. With regard to horizontals, the wider adoption of filled retorts, with the lengthening of the period of charge, has somewhat facilitated the opportunity of giving employees longer intervals of rest on Sundays, since it does not conflict with an actual stoppage of gas making.

Extra Pay for Sundays.—Extra pay for Sunday labour (usually 50 p.ct. on normal rates) is now general. This was one of the obstacles to Sunday cessation in 1902. It is a bigger obstacle to-day. We have to face the fact that the extra pay is preferred to the cessation of Sunday labour. There may be a few exceptions, but preponderatingly the gas stoker prefers the extra pay to the relaxation. This preference is emphasized by the fact that, from the humanitarian aspect, gas-works labour has greatly improved. Machinery, vertical retorts, better forms of producer and producer grates, &c., have taken away much of the donkey work.

Sunday Cooking.—No one 22 years ago urged the great demand

for gas for cooking the midday Sunday meal as a reason for not being able to stop; but many works to-day report that the biggest output of the week occurs during the two or three hours preceding 1 p.m. on Sundays. This is a factor which has undoubtedly militated against Sunday stoppages.

Present Position.

There are many other minor points that affect the question of reduction in Sunday labour, but those already briefly reviewed are the main ones which decide "Yea" or "Nay." At a price, the material difficulties could be got over; but he would be an optimist who said that it was easier to practise Sabbatarianism to-day than it has been when inquiries into the subject have been made in the past. At a price, too, the labour difficulty, due to extra pay for Sundays, could be overcome, but it would only be by a relative increase in the rate of pay for the shorter hours worked by leaving out the Sunday. If truth must be told, Sunday stoppages involve sacrifices, and unless employees are prepared to share them with employers, as to which there is no favourable indication, the Sabbatarian's dream of a closed gas-works on Sundays is farther off to-day than it was when Mr. Shadbolt approached the task "diffidently" 22 years ago.

Moreover, a glance outside shows that the "Day of Rest" appeals less than it did formerly. Tramcars run in most of the towns and cities; motor coaches clatter along the country lanes; picture houses are open; and the motorist makes of Sunday a "joy day." It is to be feared that if Dr. Gritton were alive he would exclaim: "I have fought a good fight, but I see the end of the course receding." If the ideal sought is religious observance, there is, fortunately, an opportunity for all gas-workers so inclined to attend at least one Sunday service, even if there is no Sunday stoppage at the gas-works. The odds are that a successful appeal for general Sunday observance of that kind would be as difficult as to show convincingly that circumstances to-day are more favourable to shutting-down than they were in the past.

Early Gas Supply in New York.

Writing, in the "American Gas Journal," the story of gas, with particular reference to the American Gas Industry, Mr. Ismar Ginsberg says that in 1823 a charter was granted to the first gas company to be established in New York. This was known as the New York Gas Light Company, and the first office was in a building that had been originally used as a Quaker church. The first President of the Company, too, Mr. Samuel Leggett, was a Quaker. The capital of this first Company was $200,000, and by July, 1824, there had been provided 6 miles of mains supplying gas at a charge of $10 per 1000 c.ft. The "American Gas Light Journal"—the predecessor of the present "American Gas Journal"—in its first issue, dated July 1, 1859, carried two advertisements of gas stoves and cooking apparatus. The American Gas Light Association—now the American Gas Association—was established in 1873.

A Big Tankless Gasholder.

It is announced that work will be begun shortly in Harrison (N.J.) on a very large holder of the new tankless (and hence waterless) type, which was illustrated in the Institution Number of the "Journal" dated July 2 last, and which has already been erected to the number of over forty in France, Holland, and Germany. The holder now referred to will have a capacity of no less than 15 million c.ft., and is to be constructed for the Public Service Electric and Gas Company by the Bartlett Hayward Company, of Baltimore. As the name implies, the water seal generally employed to prevent gas leakage is done away with; a tar-coated fabric is used instead. This means a great reduction in weight to be carried, and, consequently, a waterless holder can be built of lighter steel plates. Furthermore, there is no longer need to provide steam heat for the purpose of keeping the water from freezing in cold weather. At the present moment there are three or four tankless holders under construction in the United States; the Company just mentioned having also on order one of 500,000 c.ft. capacity for Somerville. It is also reported that the United States Steel Corporation are contemplating the erection of a similar, but far larger holder—one of 50 million c.ft. capacity—at Gary (Ind.). It is stated that the new holder at Harrison will be 254 ft. in diameter, and 333 ft. high. After the foundations have been laid, and the steel bottom is in position, the inside piston, the dimensions of which are approximately the interior measurement of the container, will be put together and used as a working platform in place of scaffolding, for the riveting of the steel wall plates—the piston being forced upwards by means of compressed air as the work on the side walls progresses. In view of the interest attaching to this important piece of engineering, it is anticipated that the town will be visited by engineers from all parts of the United States.

Midland Junior Gas Association.—The first meeting of the new session will be held in the Council House, Birmingham, on Friday next (Oct. 31), at 6.15, when the President (Mr. Harry Clark, Superintendent of the Distribution and Sales Department of the Derby Gas Company) will deliver his address. Subsequently the showrooms at the Birmingham Council House will be open for inspection.

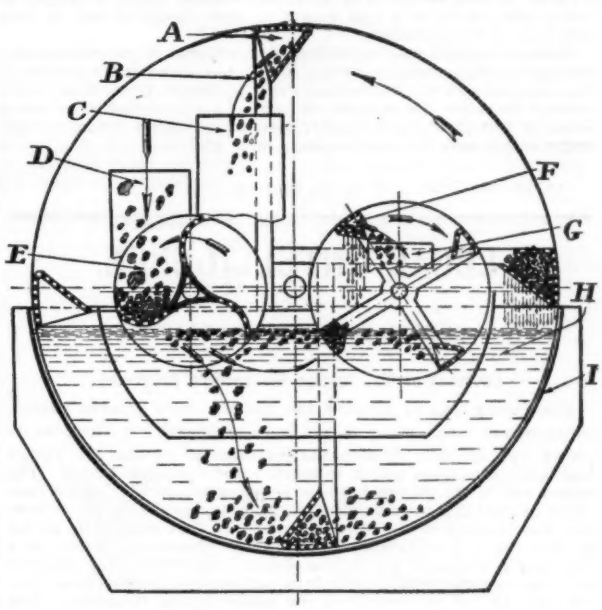
RECOVERY OF FUEL FROM ASHES, &c.

A New Plant Working on the Flotation Principle.

Remarkable claims are made for a new invention, working on the flotation principle, for the recovery of fuel from ashes, &c. For this, the "Fuel Economizer," Messrs. E. O. Winkler & Co., of 27-28, Fetter Lane, London, E.C. 4, are the sole distributors for the United Kingdom and the Colonies. A short outline of its construction and operation may be of interest.

Operation of the Plant.

It consists, broadly speaking, of a semi-circular tank containing the separating liquid, a perforated revolving feeder, and two perforated dredgers. The feeding device forms one of the most important features of the invention. It is mounted on the tank and consists of three perforated revolving arms which receive the incoming residue and take up the inherent energy of the falling material, feeding it gradually and evenly into the separating solution. The revolutions are carefully timed to allow the combustibles to follow their natural buoyancy and to prevent a continued immersion which would be caused by the residue following. The floating combustibles are directed by the feeder towards a revolving perforated dredger, mounted in the centre of the tank, and having an opposite rotary motion to that of the feeder. The heavier non-combustibles at the bottom of the tank are collected by another larger perforated dredger.



Working Arrangement of the "Economizer" Automatic Fuel Reclaimer.

A. Dredger for non-combustibles (stones, &c.).
B. Washed slag.
C. Ejector chute for slag (slag ejector).
D. Residue inlet.
E. Feeder.
F. Dredger for reclaimed combustibles.
G. Ejector chute for reclaimed combustibles.
H. Separating liquid.
I. Separating tank.

Claims Made.

The slow speed of rotation, state the firm, allows sufficient time for the separated residue to be drained and ejected, comparatively dry, since it is submerged, on the average, for not more than 3 to 5 seconds and has not absorbed appreciable quantities of moisture and clay coating. The separating solution consists in its simplest form of water to which fatty clay has been added; but other factory waste, such as chalk scrap, gypsum scrap, &c., can also be used. The plant is suitable for separating any type of coal residue, whether magnetic, non-magnetic, fine or coarse, dry or damp; and the advantages claimed are high efficiency, simplicity of design, low power consumption, minimum working costs and supervision, adaptability to local requirements, and low initial cost.

"British Industries."—The launching of the organ of the Federation of British Industries in its new form is now an accomplished fact. As in the case of "The Bulletin," "British Industries" will be the medium for the communication of information from headquarters to the members; and by means of its Export Edition it will convey to a large circle of business men a picture of the state of industry in Great Britain, month by month. This service will be useful to English-speaking merchants and those in charge of British enterprises abroad.

CORRESPONDENCE.

[*We are not responsible for opinions expressed by Correspondents.*]

Combined Gas and Electricity.

Sir,—It is now becoming recognized that in the smaller towns and larger villages where gas only is at present supplied it is only a question of a short time before the supply of electricity will also be available. In my own purview I have been surprised to notice how much active work is being done by electrical people in obtaining powers to supply electricity in such districts; and such powers, when obtained, are quickly acted upon. This being so, it becomes a matter of some urgency for all gas undertakings with electrical competition clearly in view in the near future to take stock of their own position. They obviously have to consider whether they are going to allow an outside concern to enter into competition with them, or whether they will themselves supply electricity.

If they take the latter course, it is necessary for them to obtain the requisite powers, and so prevent the lodging of an application by others. If they decide to make an application, which I suggest in many cases would be a wise course, no time should be lost, or they are likely to be forestalled.

There is a good deal of evidence to show that a gas undertaking, with its existing works, buildings, labour, and organization generally, can generate and supply electricity at a profit which would be much beyond the reach of a separate concern. I am prompted to write this letter as two cases have recently come to my notice where the gas undertakings were too late in making their application.

G. M. Gill.

119, *Victoria Street, S.W.* 1, *Oct.* 23, 1924.

LEGAL INTELLIGENCE.

COUNCILLORS AND CONTRACTS.

Reversal of Mr. Justice Bailhache's Judgment.

After taking time to consider the matter, Lords Justices Bankes, Scrutton, and Atkin, sitting in the Court of Appeal, last Thursday reversed, by a majority decision, the judgment of the late Mr. Justice Bailhache, which has caused so much stir in municipal circles. The appeal was in the case of *Lapish v. Braithwaite*, and Mr. Justice Bailhache decided that the defendant, an Alderman of the Leeds Corporation, was disqualified from being a member of the Corporation, on the grounds that a Company of which he was Managing Director, at a fixed salary, as well as a large shareholder, had entered into contracts with the Corporation for the supply of earthenware troughs, pipes, &c., and that he had an interest in the profits arising therefrom. The Court of Appeal held that such a managing director is not disqualified by the provisions of the Municipal Corporations Act, 1882, from being an alderman of a municipal corporation by reason of the fact that his company have entered into contracts with the corporation.

Judgment.

Lord Justice Bankes, in his judgment, said the case raised the important point of the construction to be placed on section 12 of the Municipal Corporations Act, 1882. Sub-section 1 of section 12 provided that a person should be disqualified from being elected to or acting upon a corporation if and while he had directly or indirectly any share or interest in any contract with a company which made contracts with the corporation. Sub-section 2 provided that a person should not be disqualified by reason only of his having any share or interest in any company incorporated by Act of Parliament or Royal Charter, or under the Companies Act, 1862. The intention of section 12 was to secure that aldermen and councillors should not place themselves in a position which conflicted with their interest. In the previous Acts the legislature proceeded on the line of increasing, rather than decreasing, the exemptions. The inference seemed to be that the legislature recognized that, having regard to municipal life and the importance of securing the services of prominent persons on corporations, it was necessary to relax to a considerable extent the stringency of the original disqualifying conditions.

The Question of Interest in Contracts.

In the absence of clear indication to the contrary, it would be assumed that the legislature did not intend by section 12 to create any fresh ground for disqualification. He could not read the language of the section as including officials or servants in companies who were paid fixed salaries, and whose normal duties consisted in the making of contracts. In his opinion, the words "share or interest" in the Act of 1882 were not synonymous terms, if "interest" was introduced in direct distinction from "share." If a managing director took no share in making a contract, had he an interest in the contract? Where were they to draw the line? Every responsible official concerned in the negotiating, drafting, or supervising the carrying-out of a contract was just as much interested, in a sense, as a managing director, and possibly a great deal more. He could not see any material difference between being concerned in and interested in a contract, if "interest" was to be interpreted as the respondent interpreted it. He did not think the expression included such an interest as came within the penal sub-section, and he could not draw a distinction between a managing director and any other official who took part in making a contract. Further, he could not think that the legislature intended, as had been suggested, that "share or interest in a company" was used in the sense of proprietory share. Taking this view, he held that the appeal succeeded, and that the judgment entered for the plaintiff (for a fine of £10 against the defendant) should be set aside, and judgment entered for the defendant. The Lord Justice added that his decision was confined to cases where the facts were similar to those in this case, and where no charge of misconduct was made against councillor or alderman.

Agreement of Lord Justice Scrutton.

Lord Justice Scrutton thought the words "direct or indirect share or interest" in a company were singularly unfortunate. What was indirect interest in a company which would render the corporation liable to a penalty? Every servant of the company had an interest in the sense that he was paid a salary. Had he, therefore, a direct interest in the contracts made by the company which employed him? If only some employees had a concern, how was the line to be drawn between those who had and those who had not? He was not satisfied that a shareholder had an indirect interest within the meaning of the words "share or interest," and he was personally inclined to think that when they indicated that he had not, they put a limited meaning on the words.

A Subject for Parliament.

He did not think that an employee had an interest, even if he took part in negotiating a contract. If he had an interest in the contract which disqualified him, he should have thought, a fortiori, it was an interest bringing him within the exemption. If he had an indirect interest in the contract, still more had he an interest in the company. He was assisted in this conclusion by the consideration that in a penal case any doubtful matter was decided in favour of the defendant. Having regard to the well-settled rule that the Court would not hold that penalty was incurred unless the language was very clear, they ought to keep on the safe side and say the words were sufficiently doubtful to enable a person to escape the penalty. There was no common-law rule as to the exercise of administrative functions, but the attention of Parliament might well be called to the question of one-man companies being enabled to do indirectly what they could not do directly. In his view the present statutory provisions did not expose Mr. Braithwaite to penalties. Whether they should be made more stringent was, of course, a matter for Parliament, not for the Court to consider.

Dissension of Lord Justice Atkin.

Lord Justice Atkin dissented, and held that Mr. Justice Bailhache's judgment was correct. He pointed out that in four months the firm in question obtained contracts with the Leeds Corporation for approximately £34,000. He presumed that one of Mr. Braithwaite's duties was to obtain contracts. Had he a share in them? No doubt he had, as a shareholder. Had he a further interest as managing director? He was paid to obtain contracts on the most favourable terms he could. If he succeeded in making contracts he had a business expectation. Therefore he came within the ordinary meaning of the word "interest." The interest was a substantial, material, commercial one; and he saw no reason for limiting the words to participation in profits or gains. The facts disclosed an interest additional to that arising from his position as a shareholder. Did he come within the clause? Share in the contract had not the same meaning as share in the corporation which made the contract. A managing director whose duty it was to make and execute contracts with an expectation of receiving additional remuneration from interest in the profits had an interest in the contract, without having as director an interest in the company. His position could not be compared with that of a servant who had to perform certain duties. His Lordship was more inclined to this view when he considered the principle of public policy. No suspicion of malpractice was suggested, but the facts disclosed showed that all its evils might be present if this case did not come within the meaning of disqualification under the Act. In his opinion, the judgment of Mr. Justice Bailhache was right. It must have been one of the last judgments of that great lawyer, and he rejoiced to be in agreement with him in seeking to maintain, though unsuccessfully, a statutory provision so essential to the maintenance of purity in local administration.

The appeal was allowed, the judgment for the plaintiff set aside, and judgment entered for the defendant.

An arrangement as to costs was made, in view of a possible appeal to the House of Lords.

Lecture on Modern Gas Lighting at Truro.

A most instructive and interesting lecture was delivered at the Truro Technical Schools last Wednesday evening, to the distribution staffs of the gas undertakings in Cornwall, on "Modern Gas Lighting," by Mr. J. W. Lofts, a Director of Messrs. William Sugg & Co., Ltd. Mr. Lofts proved himself a capable lecturer and master of the subject, and held the attention of a large meeting during the whole of the lecture. Questions were freely asked and answered, and the audience left feeling that they had gained a good deal of useful knowledge for the benefit of gas consumers. The lecture was illustrated by lantern slides displaying all descriptions of modern lighting appliances, from which no difficulty would have been experienced in selecting a suitable fitting for any class of building or house. The lecture was under the auspices of the Cornish Association of Gas Managers, of which Mr. F. G. Kingwell, of Falmouth, is Hon. Secretary. The President of the Association (Mr. F. R. G. Grant, of St. Ives) was in the chair, and at the conclusion proposed a vote of thanks to Mr. Lofts for his kindness in coming to Cornwall at a busy season to deliver the lecture. This was seconded by Mr. H. H. Hoare, of Falmouth, and carried with acclamation. Mr. Leslie Ingram, of the Truro Gas Company, was the lanternist.

Malicious Damage to Lamps.—At the meeting of the Horsforth District Council, it was reported that a hundred small squares of glass had had to be replaced in street lamps in six months, and it was decided to fix to the gas lamps in the district notice panels offering 10s. reward for information which would lead to the prosecution of persons breaking the glass.

REGISTER OF PATENTS.

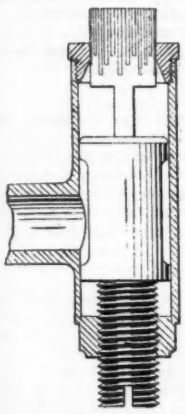
Coking Retort Ovens.—No. 205,459.

Becker, J., of Pittsburg.

No. 6434; March 6, 1923. Convention date, Oct. 13, 1922.

This invention relates to coking retort ovens of the kind having coking chambers provided with vertically flued heating walls interconnected in pairs by means of passages extending transversely over intervening coking chambers and through which the draft reversal takes place. The chief object is to equalize the distribution and control of the flow of gases to the various heating flues, whereby greater uniformity of heating is achievable, and to enable the heating of the pusher and coke discharge sides of the retorts to be controlled independently of each other and of the heating of the intermediate portions of the retorts.

The invention consists, broadly, in the transverse connections between the interconnected heating walls comprising interior and side overhead passages joining horizontal bus flues in the interconnected heating walls. There are preferably an odd number—three, five, or more—of the overhead passages connecting the horizontal flues of the respective pair of heating walls.



Valve by Howlett & Co., Ltd.

Valve for Gas Burners.—No. 221,994.

Howlett & Co., Ltd., and Dolphin, J., both of Birmingham.

No. 28,376; Nov. 10, 1923.

The construction of valve which is covered by this patent is clear from the drawing reproduced. The main feature is that some of the grooves in the sleeve are longer than others, so that the gas flow is varied by simply moving the plug lengthwise. Holes may be drilled in the end of the sleeve, if desired.

Gas Cookers.—No. 222,012.

Carpenter, C., and the South Metropolitan Gas Company, both of Old Kent Road, S.E. 15.

No. 325; Jan. 4, 1924.

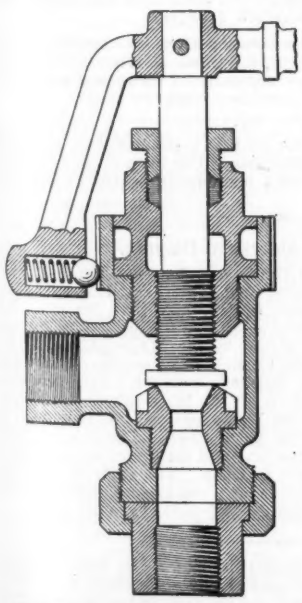
The type of cooker to which this invention refers has the oven carried on brackets which are fixed to, and rise above, the hotplate; the latter being supported on an open framework and legs. A feature of the arrangement is that the tap rail which supplies the hotplate burners is fixed along the top of the oven, thus avoiding the accidental turning-on of taps.

Valves.—No. 222,302

Taylor, A., of Milnsbridge, and West's Gas Improvement Co., Ltd., of Miles Platting.

No. 22,828; Sept. 11, 1923.

This invention relates more particularly to steam valves, and has for its object to provide a simple and efficient construction of valve which can be readily set to any desired degree of opening so that any number of valves can be quickly adjusted in unison.



Graduated Steam Valve—West's Gas Improvement Co., Ltd.

In accordance with the invention, there is provided a cylindrical part round the valve casing co-axial with the valve spindle; and slots or recesses are formed therein into which can pass a spring-pressed ball or plunger carried by a bracket upon the handle. The valve may be of conical form (this is claimed as a combined feature) with a collar at its upper end which can be brought into engagement with the valve seat when the valve is fully closed or with the valve cap when the valve is fully open. The conical formation provides for a more gradual increase or decrease of the area for the passage of fluid when the valve is being opened or closed. The valve casing may be of the right angle, conjunction, or straight line type. The usual packed gland is provided around the valve stem.

We reproduce a sectional elevation of the valve.

Street Lanterns.—No. 222,308.

Leech, S., of Southampton.

No. 23,467; Sept. 20, 1923.

The object of this invention is to gather the light emitted from a source, and distribute it over and along the surface it is desired to illuminate.

The lantern comprises a central portion carrying the source of light and two partial parabolic reflectors articulating therewith and capable of being adjusted in the required directions. Lenses are provided attached to the reflectors to gather the divergent rays which would otherwise issue from the open ends of the reflectors, and to project them as required.

Means are provided for adjusting the source of light to its most suitable position in relation to the reflectors; and the whole apparatus or part of it may be enclosed in a protective transparent shield.

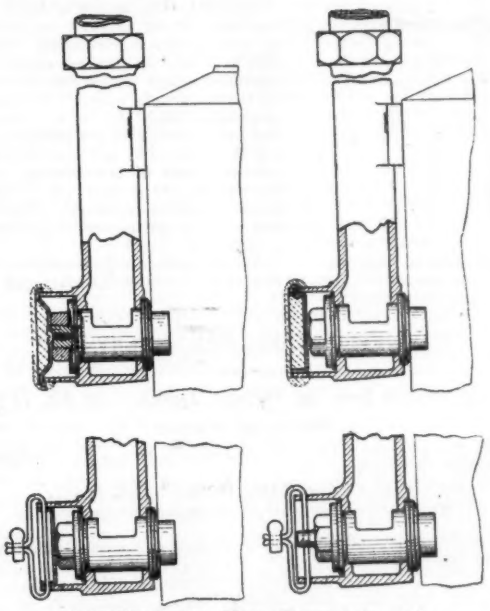
Sealing Device.—No. 222,324.

Glover, T., & Co., Ltd., and Glover, W. R., both of Edmonton, N. 18.

No. 25,686; Oct. 15, 1923.

The object of this invention is to construct a sealing device whereby the object to be sealed cannot be actuated without the seal is broken and, if sealing wax is employed, such is not communicated to the object being sealed.

The invention is especially applicable to gas meters capable of being altered from coin-freed to ordinary, and in which a holed plug is connected to the meter and carries the auxiliary inlet or outlet or the valve and coin-freed mechanism.



A Sealing Device—Thos. Glover & Co., Ltd.

There is a projecting tube and a nut; and a cap is employed having a hole in its centre through which is passed a screw which engages the screw plug. The sealing wax may be applied to the cap to cover the screw head; or the tube may have holes in the side and a hole drilled across the screw plug, and by passing a wire through the holes the end of the wire can be sealed by a lead seal; or the cap may have holes in the side corresponding to the holes in the tube, and a wire passed through them and sealed by a lead seal.

The drawings show these various methods of carrying out the invention.

Gas Cookers.—No. 222,321.

Radiation Limited, of Birmingham, and Yates, H. J., of Grosvenor Place, S.W. 1.

No. 25,150; Oct. 9, 1923.

The specification covers a gas cooker hotplate of the type described and illustrated in our article on "The 'New World Junior' Gas Cooker" on page 457 of Vol. 166.

The object of the invention is to provide a hotplate of improved construction whereby the multiplication of elements for hotplates of different sizes is reduced to the minimum, without sacrificing either thermal efficiency or convenience in use.

The claims, *in extenso*, are:

1. In hotplates for gas cooking apparatus, the employment of a pair of grid-supporting bars arranged parallel with each other for carrying the grid elements, and end brackets for carrying the said bars, and the construction of the grid from a plurality of similar elements in the form of bars arranged parallel to each other and transversely across the grid-supporting bars, substantially as described.

2. In hotplates as claimed in Claim 1, the employment of burners formed with mixing tubes arranged parallel with the grid elements, substantially as described.

3. In hotplates as claimed in Claims 1 and 2, the provision of bridge bars supported on the end brackets for carrying the burners, substantially as described.

4. In hotplates as claimed in Claim 1, the securing of the grid-supporting bars and end brackets by obliquely arranged screws, and the adaptation of the interacting portions of the bars and brackets to take vertical and lateral pressures, substantially as described.

5. In hotplates as claimed in Claim 1, the provision of curved ends on the grid elements and curved and tapered recesses in the supporting bars for accommodating the said ends of the grid elements, substantially as described.

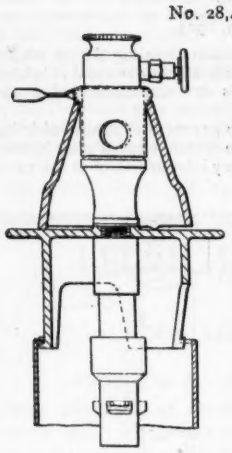
6. The construction of hotplates as claimed in Claims 1 to 3, so that the component parts excepting the grid-supporting bars and bridge pieces are applicable to hotplates of different sizes, substantially as described.

7. A hotplate as claimed in Claim 1, and comprising the combination and arrangement of parts, substantially as described and illustrated.

Inverted Burners.—No. 222,345.

Smith, F., of Sunderland.

No. 28,403; March 12, 1924.



A Preheating Lighting Burner.

This invention relates to inverted incandescent gas burners of the kind provided with an air chamber formed by a fitting surrounding the mixing chamber and resting on the corona and enclosing the air-supply inlets, for the purpose of automatically heating the air, while the gas is burning, before it enters the mixing chamber.

The burner according to this invention is characterized in that the upper end of the air-heating chamber bears on and is closed by the adjustable sleeve commonly used for varying the opening of the air supply inlets. The corona is preferably made of fire-resisting glass, but may be made of aluminium or other suitable material, and the fitting may also be made of fire-resisting glass or aluminium, or it may be of brass or other convenient material. The mixing chamber of the burner is preferably of aluminium.

We reproduce a part-sectional elevation of one form of the invention.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official Journal" for Oct. 22.]

Nos. 24 158 to 24,845.

Coke & Gas Ovens, Ltd.—"Neutralizing free acid in sulphate of ammonia." No. 24,493.

Fairbrother, H.—"Gasification of coal." No. 24,231.

Fairbrother, H.—"Distillation of carbonaceous material." No. 24,232.

Filer, F. A. R.—"Apparatus for recording pressure, consumption, and the rate of flow of gas, &c." No. 24,463.

Hendrick. C. F.—"Pressure gas blowpipes." No. 24,757.

Jackson Research Corporation.—See Fairbrother, H. Nos. 24,231, 24 232.

Pearson, R.—See Coke and Gas Ovens, Ltd. No. 24,493.

Prestage, E.—"High-pressure gas-compressors." No. 24,580.

Stone, E. G.—"Retorts." No. 24,609.

West & Co., Ltd., H. J.—See Prestage, E. No. 24,580.

APPLICATION FOR EXTENSION OF TERM.

Application is being made for an extension of the term of patent No. 1630 of 1909, granted to Robert John Milbourne for "Improvements in connection with gas purifiers."

The Hebden Bridge and Mytholmroyd Gas Board have decided to make application to the Ministry of Health for sanction to borrow £9600, in order to put down a new bed of Dempster-Toogood vertical retorts and a coal-handling plant. Provided their tender proves satisfactory, Messrs. Robert Dempster & Sons, Ltd., will carry out the work.

A deputation from the Rochdale Corporation Gas Committee paid a visit to Blackburn last Wednesday, and were accompanied by their Gas Engineer, Mr. T. Banbury Ball. They spent some time at the Greenbank Gas-Works inspecting the new retorts there, in view of contemplated extensions at Rochdale. The deputation were received by the Mayor (Alderman J. T. T. Ramsay, J.P.), Councillor E. Hamer, J.P. (Chairman of the Gas Committee), and Mr. G. P. Mitchell (the Corporation Gas Engineer).

Prof. W. S. Boulton last week delivered a lecture to the Birmingham Natural History and Philosophical Society, on "The Red Rocks of Birmingham." From an economic point of view they claim special attention, because a knowledge of their thickness, character, and relationship is necessary in order to determine the depth of the workable coal seams, which in some parts are deeply buried under a cover of these red rocks. Indeed, the prosperity of the Midlands in the near future, said Prof. Boulton, will largely depend upon the discovery and opening-up of such concealed coalfields.

MISCELLANEOUS NEWS.

GAS v. ELECTRICITY AT LEICESTER.

Report on an Inquiry Regarding Policy.

[From the "Leicester Mercury."]

Gas for Cooking and Electricity for Lighting in the Home.

This is the verdict of the Special Committee appointed by the Leicester City Council "to consider the whole question of the production and distribution of light, heat, and power by the Electricity and Gas Committees, particularly as to whether it is most economical to define, limit, and encourage competition between the two."

For the purpose of comparison, both gas and electricity were reduced to a common denominator—British Thermal Units. There are 100,000 B.Th.U. in 1 therm of gas, while the unit of electricity produces 3411 B.Th.U. at the consumer's terminal. Thus in Leicester for 1d. the consumer, with gas at 8d. per therm, receives 12,500 B.Th.U., and with electricity at 1d. per unit receives 3411 B.Th.U. On this basis, therefore, gas has a great advantage; but the higher efficiency of electrical apparatus reduces this considerably.

Coal Conservation.

From the standpoint of conserving the national fuel resources, gas-works practice in Leicester showed a thermal efficiency of 84 p.ct.—23 p.ct. gas, 50 p.ct. coke, and 11 p.ct. tar—as against 8½ p.ct. approximately for electricity last year The latter was abnormally low, owing to the fact that the Lero and Aylestone Generating Stations are out of date. These two stations will shortly be used solely for stand-by purposes. The central station burns a lower-grade fuel and now gives a much higher result—viz., 14·2 p.ct.

Convenience of Electricity.

Smoke abatement is served by both services, especially by gas, which gives a smokeless fuel bye-product in coke. In this connection it may be pointed out that open grates are the cheapest to the consumer, but the dearest to the community, being both wasteful and smoky. For short periods, however, both gas and electric fires will be found to be cleaner and more economical. Summarized broadly, it may be said that gas is cheaper for all light, heat, and power purposes, but electricity is cleaner and more convenient. Electricity is certainly more flexible in application; and this has distinct advantages on occasions.

Verdict of the Stoves.

Carefully prepared tests in cooking were undertaken by both departments, under the direct observation of the Committee.

A dinner for five persons was cooked by experts at a cost of less than ½d. per person in each case.

The oven of the electric stove appeared to be the more efficient, but the top of the gas stove was certainly more serviceable for the average housewife. The shrinkage of food cooked by electricity was considerably less than by gas, but the Gas Department maintained that this was merely due to the evaporation of water.

Experience at the Taps.

It was noticeable that both cooks effected economy by cooking slowly. Immediately the required heat was attained, the minimum of heat was used to complete cooking. Heating water was cheaper by gas, particularly with large quantities. It cannot be too strongly emphasized that much depends upon intelligent manipulation, especially with electricity.

Generally speaking, the Committee advocate gas for cooking and electricity for lighting in the house. It must be noted that, while the special vessels and various appliances for electricity are expensive, to the housewife who can afford the outlay they form an easy escape from domestic drudgery.

The Committee suggest that the Housing Committee might experiment with two houses, one all gas, the other all electricity, with a Triplex type grate in the living-room only. This should materially reduce building costs, as only one chimney would be needed.

Benefit of Rivalry.

At present the Committee cannot see that limitation of either of the two services is practicable or desirable. The keen rivalry between them serves to stimulate both, with consequent benefit to the consumers.

Settlement of Aldershot Dispute.

It is pleasing to record that differences between the Aldershot Borough Council and the Aldershot Gas, Water, and District Lighting Company have been amicably settled, and that the litigation between the two authorities is now at an end. This intimation was conveyed at a recent Council meeting by the Mayor (Alderman H. Ainger, J.P.), who, in reply to the Council's expressions of gratitude for the admirable way in which he had dealt with the matter, said that if thanks were due they were due to Mr. R. W. Edwards (Chairman and Managing Director of the Gas Company), Mr. N. Clinton (the Company's local Solicitor), and the Town Clerk. The result of the agreement would be that the Company and the Council would work amicably together for many years to come. The settlement would permit the development of the Company; and this, of course, would mean more employment and further development of the town.

L.C.C. and the Brentford Standard Price.—The report of the Public Control Committee, recommending that application be made to the Board of Trade for an Order reducing the standard price applicable to the Brentford Gas Company, was adopted without discussion by the London County Council at their meeting on Tuesday of last week.

NEWCASTLE-UPON-TYNE AND GATESHEAD GAS ORDER.

Acquisition of the Undertakings of the Walker and Wallsend Union Gas Company and the Chester-le-Street Gas Company, Ltd.

An inquiry into an application by the Newcastle-upon-Tyne and Gateshead Gas Company for a Special Order under section 10 of the Gas Regulation Act was held by Mr. H. C. HONEY (Director of Gas Administration at the Board of Trade) at the Offices of the Board, on Friday, Oct. 17.

The principal object of the Order is to enable the Newcastle and Gateshead Gas Company to acquire the undertakings of the Walker and Wallsend Union Gas Company and the Chester-le-Street Gas Company, Ltd., and to extend the area of supply. The only opposition came from the Chester-le-Street Rural District Council, who were appreciative of the advantages which would accrue to gas consumers in their district as the result of the proposed amalgamation, but were anxious that a certain part of their area, at present supplied by the Birtley Iron Company, should be supplied by the Newcastle and Gateshead Company, and that the price over the whole of the rural district should be uniform.

The Newcastle and Gateshead Company were represented by Mr. C. E. C. BROWNE (Messrs. Dyson, Bell & Co., Parliamentary Agents), and the Chester-le-Street Rural District Council by Mr. P. BENNETT (Solicitor for the Council).

Mr. C. E. C. BROWNE, opening the case for the promoters, said that the Walker and Wallsend Company's area of supply consisted of the Borough of Wallsend and that part of the City of Newcastle which was known as Walker. The Newcastle and Gateshead Company supplied the remainder of the City of Newcastle, the Borough of Gateshead, and a large area comprising certain adjoining districts. The Chester-le-Street Company supplied a comparatively small area at the side of the Newcastle Company's area, consisting of the Urban District of Chester-le-Street, and the parish of Pelton, in the Rural District of Chester-le-Street. The parish of Pelton, which was the only part of the rural district affected by the present application, was, naturally, less populated than the urban district. The Order included provisions with regard to differential prices to be charged in the absorbed areas as compared with the price charged in the Newcastle Company's present area. These were agreed to by the Wallsend and Newcastle Corporations (the local authorities for the Walker Company's area), and by the Chester-le-Street Urban District Council. The differential price in the parish of Pelton had not been accepted in terms, however, by the Chester-le-Street Rural District Council; and he did not know whether they were satisfied with it or not. The effect of the clause was that, so far as the Walker district was concerned, for the first five years the differential was to be 0·8d. per therm above the price in the Newcastle Company's existing area, and the same scales and discounts for meter rents as existed in the districts were to continue. This meant that there would be no immediate drop in the price to the ordinary consumers in the Walker district, though there would be an advantage in regard to public lighting. The real advantage to the ordinary consumers was that, after the expiration of the five years, the price would come down to that being charged in the Newcastle district. Apart from this postponed benefit, however, there was the advantage, which the consumers in the Walker district would share in common with all the consumers of the enlarged concern, resulting from the economies of administration, distribution, and manufacture which it was hoped would be effected by the amalgamation. With regard to the Chester-le-Street district, for the first five years the price was to be 2·6d. per therm above that charged in the portion of the City of Newcastle at present supplied by the Newcastle Company, but was not to exceed the maximum price chargeable by the Company for the areas outside the City of Newcastle and the Borough of Gateshead. After the five years the differential price was to be reduced to 0·4d., and was to remain at that figure. This would mean an immediate advantage to consumers in the Chester-le-Street Company's area.

Asked by Mr. Honey what was the extent of that immediate advantage, Mr. Browne said that the arrangement was complicated, but it would be between 1d. and 2d. per therm.

Mr. BENNETT said it could be taken that the Rural District Council would not quarrel with this arrangement.

Mr. BROWNE, in reply to Mr. Honey, said that the differential price was not compulsory, during either the five years or the subsequent period. With regard to the calorific value of the gas supplied, a clause in the Order continued, for the present, the declared calorific values in the three areas (all three are different), until there was a further declaration by the Newcastle Company. This clause was inserted, said Counsel, in order to avoid confusion, though he did not remember seeing a similar clause before. Another clause extended the limits of supply of the Newcastle Company by the addition of a very small area situated between the northern part of the Chester-le-Street Company's district and the southern boundary of the Newcastle Company's present limits of supply. The principal reason for this, apart from the fact that it rounded-off the boundary better, was that there was a main road running through the added area, which was important in that it would enable the Newcastle Company to link up their present works with the Chester-le-Street area, if and when the time came for them to supply the latter area from those works.

Dealing with the reasons for the appearance at the inquiry of the Rural District Council, Mr. Browne said that, in 1915, there was great activity in connection with the establishment of munition factories, and so on, and there were three parishes—Birtley, Ouston, and Urpeth—which were in the rural district of Chester-le-Street, but were not then within the Newcastle Company's area of supply. A very large munition factory was established in Birtley, and the Newcastle Company were asked to supply gas to this factory. They agreed to do so, and the cost of the connecting mains was borne by the Ministry of Munitions. In 1915 the Company gave notice of their intention to promote a Bill in Parliament, to add the three parishes to their area of supply. This Bill was promoted in 1916. Prior to 1915, a private firm, the Birtley Iron Company, had been making gas and supplying it to their workmen and others living in the three parishes concerned, and they had petitioned against the Newcastle Company's Bill. They objected to the inclusion of the three parishes in the Newcastle Company's area, on the ground that it would interfere with what they conceived to be their vested rights there. In order to get rid of this opposition, the Newcastle Company had entered into an agreement with the Birtley Iron Company, by which they undertook to supply gas in bulk to the Iron Company for distribution by the latter to their consumers, and also, during the continuance of the agreement, not to exercise their statutory rights to supply gas in the three parishes. This agreement was to run for 30 years from Jan. 1, 1917, and was scheduled to the Newcastle Company's Act, 1916. It was amended in certain respects, but not very materially, by a further agreement in 1920, under which provision was made for the laying of a connecting main; and since then the Birtley Iron Company had abolished the retort house they had used formerly for the manufacture of gas, and depended entirely on the Newcastle Company for the gas they supplied to their consumers. The Birtley Iron Company were also supplying a few houses in the northern part of the parish of Pelton (which parish is part of the Chester-le-Street Company's area, and is to be taken over by the Newcastle Company under the present Order). There were no restrictions upon the Chester-le-Street Company, and therefore the Birtley Iron Company were in the position of unauthorized distributors supplying in competition with a statutory Company, who might, but were not in fact, supplying those houses. Thus, under the present Order, the Newcastle Company would be in the same position as the Chester-le-Street Company were to-day in Pelton. Mr. Browne understood that the attitude of the Rural District Council was that they would like the whole of the arrangements made with the Birtley Iron Company to be wiped out, so that the Newcastle Company would be left in the position of unfettered statutory distributors. If the present Order were made, they would, of course, remain unfettered statutory distributors in Pelton, but they would still be subject to the restriction in respect of Birtley, Ouston, and Urpeth. The price charged by the Birtley Iron Company was uniform to the whole of the consumers they supplied, but was slightly higher than the price which the Chester-le-Street Company were charging to their consumers in Pelton. The price charged by the Birtley Company was by no means unreasonable, when compared with the prices charged by small gas undertakings in the neighbourhood, and did not show an unreasonable profit. But he suggested that this was not a case where Mr. Honey could very well go into questions of merits of that kind. The Newcastle Company had entered into the 1916 agreement as a Parliamentary bargain; and the effect of entering into it was that the Birtley Iron Company had withdrawn their opposition to the 1916 Bill. Therefore, the Newcastle Company were bound, in honour, to support that agreement, and to resist any attempt to upset it. He added, however, that the Newcastle Company were not at all averse to any reasonable arrangement to which the Birtley Iron Company might be willing to agree. Since the point was raised by the Rural District Council, the Newcastle Company had asked the Birtley Iron Company on what terms they would be prepared to forego their statutory right. The Birtley Iron Company had stated their conditions; but these conditions, which it was perfectly within the rights of the Birtley Company to put forward, were not such as the Newcastle Company, in the interests of their consumers as a whole, felt they were entitled to accept.

In their objections to the present application, said Mr. Browne, the Rural District Council had not raised this question at all, and, when the Newcastle Company published their statutory notice of the application for the Order, and deposited the draft Order, they had given no indication whatsoever that there was any suggestion of altering the statutory arrangement between the Birtley Iron Company and the Newcastle Company. If the Board of Trade were disposed to adopt the rather strong course of repealing, without any notice, the agreement scheduled to the 1916 Act, the effect would be that those consumers now being supplied by the Birtley Iron Company would have no supply at all, and the bulk of them could get no supply from the Newcastle Company, because the distributing system belonged to the Birtley Company, and it might be a considerable time before, in the reasonable management of their undertaking, the Newcastle Company saw their way to extend the mains to give to consumers now being supplied by the Iron Company a supply of gas in substitution for it. Again, so long as the Birtley Iron Company could get a supply in bulk, they could go on doing what they were doing to-day, and the repeal would not prevent the Newcastle Company from entering into another agreement with the Iron Company for the supply in bulk. Mr. Browne raised the technical objection that the question was not relevant to the present application.

Mr. HONEY said he did not know exactly what the Rural District Council asked the Board of Trade to do, but they might dispose of it. The Order had been agreed with the Newcastle Corporation and practically by all the local authorities, and the opposition related to something which was not in the Order.

Mr. BENNETT agreed that the Rural District Council did not really object to the terms of the Order. In the course of his remarks, he said he wanted the price of gas throughout the Rural District Council to be uniform, and it was felt that, as the Manager of the Birtley Iron Company was a Director of the Newcastle Gas Company, there might be a possibility of arranging for this uniform price. The Rural District Council appreciated the difficulties. The price charged by the Birtley Iron Company was 5s. 5d. per 1000 c.ft., subject to 5 p.ct. discount, and that charged by the Chester-le-Street Company was 4s. 9½d. He agreed that the proposed amalgamation was a highly progressive step, and the Rural District Council wanted to help it.

Mr. HONEY said there was a practical difficulty in dealing with this matter in the present Order. He did not want to say that they must not discuss it at all, because he considered it was in the interests of both parties that matters of this kind should be discussed, and, if possible, settled by a friendly arrangement. He imagined that the agreement, which had been confirmed by Parliament, never came to the notice of the local authority until it was put into the filled-up Bill.

Mr. BROWNE considered this probable.

Mr. HONEY (continuing) said that the local authority had hardly had an opportunity of discussing the effect of the agreement upon them.

It did seem to him that, while the Newcastle Company were bound to resist any attempt to modify the agreement compulsorily, yet the matter was not one which the Company should regard as absolutely closed to discussion If there were any possibility of some modification which would meet the views of the local authority, the attitude which the local authority was taking up was really a very high compliment to the Company, and he should have thought that the Company would have strained every effort to meet the views of the local authority. He did not know whether the Company considered that absolutely nothing more could be done, and that this rather anomalous situation must continue.

Mr. BROWNE said he was instructed that the proposal which the Newcastle Company had made to the Birtley Iron Company went to the very extreme of what they felt they were justified in offering. They must regard the practical effects of their offer from the point of view of the interests of the consumers. The matter could not be regarded as entirely closed, and, if the Iron Company came to the conclusion that, after all, the terms offered by the Newcastle Company were fair, further discussions could take place. Anomalous though the present position was, it was no more anomalous than it was at the time it was created and sanctioned by Parliament. Referring to Mr. Bennett's remarks, Mr. Browne said he was anxious to clear up any possible misconception with regard to the identity of the Newcastle Company and the Birtley Iron Company. The Manager of the Iron Company had been a Director of the Newcastle Company for about two years, so that he had joined the Board after the agreements with the Iron Company had been made. Further, in 1916 he was not in the service of the Birtley Iron Company, so that it was no more than a coincidence that one of the Directors of the Newcastle Company was Manager of the Birtley Iron Company.

Mr. BENNETT remarked that he had mentioned the matter merely to show that the two concerns could be in very close touch with one another for the purpose of negotiations.

Mr. BROWNE replied that this was one reason why he had ventured to say that the discussions were not absolutely closed. As to the charge made for gas by the Birtley Iron Company, and the price paid by them for gas in bulk, the difference between the gross amount paid for gas in bulk and the receipts for gas distributed did not represent anything more than a proper charge for the cost of distribution and the interest on the capital represented by the distributing plant. Again, the price charged by the Chester-le-Street Company in the Urban District of Chester-le-Street was 11·5d. per therm, equivalent to 4s. 9½d. per 1000 c.ft., and 11·9d. per therm, or 4s. 11½d. per 1000 c.ft., in the parish of Pelton. The latter price was the one which should be compared with the price charged by the Birtley Iron Company—*i.e.*, 5s. 5d. per 1000 c.ft. This figure, however, was subject to a discount of 5 p.ct., which reduced the price to 5s. 1¾d. per 1000 c.ft., and this should be compared with the 4s. 11½d. (which was not subject to a discount), so that the actual difference only amounted to 2¼d. per 1000 c.ft.

In reply to Mr. Honey, Mr. Browne said the Newcastle Company proposed to supply in Pelton at 4s. 2·4d. per 1000 c.ft., which was equivalent to 11·2d. per therm, *less* 10 p.ct.

Mr. HONEY, in the course of further discussion, said he believed it was agreed on all hands that, so far as the present Order was concerned, they could do nothing. The Board of Trade could put no compulsory clause in the Order to alter the agreement confirmed by Parliament in 1916. For one thing, the Birtley Iron Company were not represented at the inquiry, and it would be impossible to take from them rights which had been given by Parliament, without hearing what they had to say. The best course was for the Newcastle Gas Company and the Birtley Iron Company to continue to try to come to an arrangement which would be more or less satisfactory to the Rural District Council.

Mr. BROWNE reiterated, on the authority of Mr. T. P. Ridley (Secretary and Commercial Manager of the Newcastle Company), that the offer made to the Birtley Iron Company would remain open, but he could not hold out any hope that they could improve upon this offer with a view to tempting the Iron Company to give up their rights.

Mr. HONEY ventured to suggest that, in the meantime, the Rural District Council should raise the question at every favourable opportunity.

Mr. BENNETT said that the Rural District Council had never before had an opportunity to remedy the position, and there was a feeling that, once the present Order was granted, their chances of negotiating would come to an end.

Mr. HONEY, in expressing the hope that some satisfactory result would accrue from continued negotiations between the parties, said everybody recognized that the attitude of the Rural District Council in this matter was perfectly reasonable. They were never consulted at the time the agreement was made, and had not had an opportunity of expressing an opinion on it.

In the course of further discussion of Mr. Honey's suggestion that the Newcastle Company should do their utmost to come to a satisfactory arrangement with the Iron Company, Mr. Bennett asked if Mr. Browne was prepared to say that this would be done. Mr. Browne, however, was rather impressed with the delicacy of the position of the Newcastle Company, as also was Mr. Honey, but said that the Newcastle Company would not put any obstacle in the way of a settlement. The offer already made was still open, though turned-down temporarily. If the Newcastle Company continued to approach the Birtley Iron Company, the latter might retort that the Newcastle Company had made the bargain with their eyes open, and should be content. Mr. Honey pointed out that the Rural District Council could approach the Iron Company. To Mr. Bennett's suggestion that the Newcastle Gas Company had a stronger claim so far as negotiations were concerned, Mr. Honey replied that the fact that the Rural District Council had appeared at the inquiry would become known to the Iron Company, and he should imagine that the latter would not be surprised to hear from the Rural District Council what their wishes were, or to be asked to consider arrangements which would be satisfactory.

The inquiry then closed.

COMBINED GAS AND ELECTRICITY SUPPLIES.

A Scheme at Horley.

The latest proposal for a joint gas and electricity supply comes from Horley, and is to be the subject of a Bill in the ensuing session of Parliament, notice of which has appeared in the "London Gazette."

The Horley District Gas Company will, by this Bill, seek powers to erect a generating station and works on their land and to supply electricity within a defined area; to provide and fix engines and dynamos for the purposes of private installations; to manufacture and supply fittings; to furnish electrical energy or current by agreement in bulk; to change the name of the Company; and to raise further capital.

The Agents are Messrs. R. W. Cooper and Sons, of No. 5, Victoria Street, Westminster, S.W.

GAS APPLIANCES EXHIBITION AT SOUTHPORT.

A successful exhibition of gas appliances concluded at the Cambridge Hall, Southport, on Saturday, after being open from the previous Tuesday. Among those who exhibited were the Corporation Gas Department, which took the lead in the organization; the Richmond Gas Stove and Meter Company; Wilsons and Mathiesons; R. & A. Main, Ltd.; General Gas Appliances; the Davis Gas Stove Company; John Wright & Co.; Fletcher, Russell, & Co., Ltd. Each day cookery lectures were given by Miss Bonham Carter.

The opening ceremony on Tuesday was performed by the Mayor (Alderman C. Aveling, J.P.)—Alderman E. Trounson, J.P. (Chairman of the Gas Committee) presiding. On the platform were a large number of members of the Corporation, and the Gas Engineer and Manager (Mr. John Bond).

The Chairman said that last year they had the greatest output of gas in the history of the town. They had an increase of about 8 p.ct. Since April 1 this year, without any special effort of advertising or propaganda, the increase in the consumption of gas had been over 20 million c.ft. He wondered last year what the demand of Southport would be if residents had the opportunity of seeing the latest things in gas appliances; and that was the origin of the exhibition.

The Mayor, in declaring the exhibition open, congratulated the Gas Committee on so successfully organizing the exhibition. It was good that the general ratepayers should have opportunities of seeing what was being done for them by the various Committees of the Corporation. He congratulated the exhibitors on their displays. His advice to consumers was to scrap their old stoves and buy new ones. The Corporation gas officials were astonished at the number of gas stoves which were out of order. The reason was that in many cases they had never been cleaned. They could not expect to get the full value out of gas appliances unless they were kept clean. In 1850, when gas was 7s. 6d. per 1000 c.ft., 518,000 c.ft. were consumed in Southport. In 1923, when it was 2s. 10d., the consumption was 662,500,000 c.ft. This showed the enormous strides which had been made.

TRADE NOTES.

Evesons (Coal) Ltd.

From Nov. 1, the G. J. Eveson Coal and Coke Company, Ltd., of Birmingham, are changing their title to Evesons (Coal) Ltd., though the business will continue to be carried on as hitherto.

Purifiers at Portsmouth.

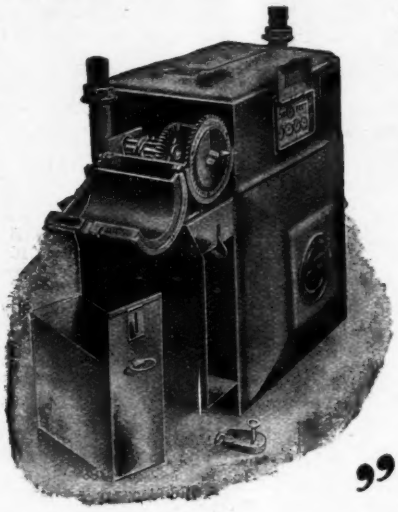
In connection with the visit of the Southern Association of Gas Engineers and Managers to Portsmouth, mention was made of the purifiers at the Hilsea Works. It may be added that the Horseley Bridge and Engineering Company, Ltd., of Dudley Port, Tipton, were responsible for practically the whole of the purifiers at the Portsmouth Works, including the boxes laid down during the past few years.

Tankless Gasholders.

Readers interested in the tankless type of gasholder, a model of which was on view during the last meeting of the Institution of Gas Engineers, will find illustrated particulars in a pamphlet prepared by the Tankless Gasholder Company, Ltd., of No. 47, Victoria Street, London, S.W. Photographs, also, are given of a number of these holders which have already been erected. Messrs. C. & W. Walker, Ltd., Messrs. Samuel Cutler and Sons, Ltd., and Messrs. Ashmore, Benson, Pease, & Co., Ltd., are the manufacturers of this type of holder for the Tankless Gasholder Company, who are sole licensees for Great Britain, the Colonies, &c.

Cheaper Transport.

The possibility of obtaining a really first-grade British-built 30-cwt. commercial vehicle chassis for £360 is of interest to every user of transport. This is the attractive proposition offered by Messrs. John I. Thornycroft & Co., Ltd., in conjunction with the War Office subsidy scheme offering a grant of £120 to every owner of the new Thornycroft Subsidy Type "A1" chassis. Thornycrofts have based the design of the new chassis upon their own thirty years' experience in the manufacture of commercial vehicles, at the same time keeping in mind the latest War Office specification; and they have produced a chassis embodying many new features while conforming with War Office requirements. Two completed vehicles have recently been subjected to drastic trials by the War Department, who have since accepted the new chassis as a subsidy type. The subsidy is equivalent to a rebate of 25 p.ct. from the manufacturers' price for the "A1" chassis of £480. The new model is now in progress for quantity production, and deliveries will shortly be available.



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(BRANCH OF METERS LIMITED),

MILES PLATTING, RADFORD ROAD,

MANCHESTER. NOTTINGHAM.

45-47, Westminster Bridge Rd.,

LONDON, S.E.

NORTH-EAST COAST COAL TRADE.

From our Own Correspondent.

There have been no changes of note in the market during the past week, and it has been quiet and uninteresting. There has been rather more inquiry about from abroad; but would-be buyers' ideas still make business very difficult. Sellers on this side are generally adopting the attitude that it is better to "run" the market than sell at prices which are offering at present for next year, and which would entail working at a certain loss.

For the remainder of this year, business is still slow. Contractors hold a good deal of coal at higher prices, but are mostly only selling from hand to mouth. A slight improvement in northern-bunkered steams was not maintained at the week-end. Durham unscreened bunkers are in plentiful supply, and coking makes remain weak. Gas makes are still reasonably steady, being no doubt helped by the seasonal demand. Wear Specials continue to quote 21s. 6d. to 22s. f.o.b., and best qualities 20s. 6d. to 21s., though good makes can be had at 20s. Seconds are 17s. 6d. to 18s.

COAL TRADE IN THE MIDLANDS.

From our Local Correspondent.

The falling-off in current demand is accentuating price irregularities. Some collieries would be very willing to accept offers substantially below the ruling market rates (though these are necessarily falling) in order to relieve themselves of accumulations of nuts, beans, and slacks, which are seriously interfering with the mobility of traffic. It is reported that some Midland collieries are giving fine slacks away so as to free sidings and rolling stock. There are many instances in which a nominal price has been accepted. Rough slacks are likewise being offered at very low rates. For the time being the economics of the industry are badly unbalanced. It is hoped that a clearing of the political atmosphere will lead to steadier trade conditions. At present the call for industrial fuel is very sluggish. Values generally have a downward tendency, except as regards the highest grades of household coal, which still head the market. Gas undertakings are no busier on industrial account; but the domestic consumption is gradually increasing, and contract deliveries of coal are being taken pretty regularly. There is no storage accommodation available to enable inquirers to take advantage of the bargains which are being offered. Consequently very little new business is passing. Blast-furnace coke of about 14 p.ct. moisture can be bought at 16s. at ovens.

YORKSHIRE AND LANCASHIRE COAL TRADE.

From our Local Correspondent.

So far as the Lancashire end of the trade is concerned, the market for fuel remains on the dull side, though the house-coal trade is fairly active and, as is to be expected at this time of the year, is improving. The nominal prices at the collieries remain unchanged; but cheap "foreign" fuel is seriously competing with Lancashire stocks of industrial fuel. The demand for furnace coke is very limited, and foundry coke is being subjected to keen competition from the Midlands.

There is little change in the situation in Yorkshire. An increased demand for house coal is expected; but the indications are that the trade will be able to deal with it in reasonable time. There is no improvement in the demand for industrial fuel, and exporters say that inquiries from abroad have fallen off considerably, even since last week. The larger collieries have mostly been working full time. Prices generally are by no means stable. Best steam hards have been in fair demand for the home market; but shipping has been decidedly weak. Bunkering coals have been slow; slacks only weak, and generally merchants find themselves with more stocks than orders. Furnace and foundry coke give no promise of improvement, and gas coke is slightly weaker. The prices ruling have been as follows: Yorkshire, Derby, and Notts large screened steam, f.o.b. Humber ports, 17s. to 20s. per ton. Cargo for export, f.o.b., usual ports: Best Yorks, hards, 23s. 3d. to 23s. 6d.; Derby best hards, 24s. to 25s.; South Yorks washed doubles, 19s., and singles, 18s. to 18s. 3d.; dry doubles, 15s. to 17s.; washed smalls, 15s. to 15s. 6d.; rough slacks, 11s.; gas coke, 32s. to 36s.; foundry furnace coke, 19s. to 20s. 6d.; washed steam thirds, 19s.; and South Yorks washed trebles, 22s. 6d. to 23s. per ton. Exports of coal from Hull to foreign countries during the week were 52,433 tons.

Gas Exhibition at Lincoln.—An interesting exhibition of gas apparatus was opened on the 13th inst. at Lincoln; and so excellent have been the results obtained that, though the original closing date was fixed for Oct. 23, it was decided to carry on for another week. A special feature has been made of Radiation gas grates and cookers, these being manufactured and supplied by the Richmond Gas Stove and Meter Company, Ltd., Wilsons and Mathiesons, Ltd., John Wright & Co., and the Davis Gas Stove Company, Ltd.

Meter Testing in Edinburgh.—In his report for the year ended May 15, Mr. William Gordon (Official Meter Inspector) states that the number of meters tested at the Edinburgh Testing Station amounted to 79,072, of which 2627 were wet meters. Fees totalling £4295 were collected, the profit on the year's work, after spending £408 on new apparatus, being £831. A new testing station situated at Beaverhall, Broughton Road, was opened during the year, and there are now eight district testing stations under the jurisdiction of the magistrates. Of the 76,445 dry meters tested, 1355, or 1·77 p.ct., were rejected as incorrect; while of the 2627 wet meters, 2, or 0·076 p.ct. of the total, were rejected.

STOCK MARKET REPORT.

The buoyancy on the Stock Exchange which, as we indicated in our previous report, was attributable to the optimistic view taken as to the General Election prospects continued up to Thursday last, when profit-taking by the earlier buyers tended to steady prices. At the end of the week, however, they were again showing firmness. The lucky allottees of the German Loan were pleasantly surprised by the dealings, which rose to 5¼ premium, closing slightly below this figure. Brisbane Tramway Trust 5½ p.ct. Loan was floated successfully, and the scrip was quoted at ¾ premium. The terms of the South African £8,000,000 loan issue were announced on Friday. This will take the form of 5 p.ct. stock at 99½ redeemable 1940–1960. The underwriting of the loan naturally checked dealings in other Colonial issues.

Industrials were fairly well supported. Textiles, Iron and Steel, and Cable Construction were prominent, but there was a tendency to await the result of the General Election. The Rubber Market was strong; prices rising appreciably and closing very little below the best. Teas on the other hand were decidedly dull.

It will be seen there were a fair number of transactions recorded in the Gas Market, and, with two exceptions—a fall of ½ in the Gas Light ordinary, and of 1 in Newcastle 3½ debenture—the changes were on the upward scale. The rise of 4½ in the Aldershot 4 p.ct. preference is not surprising, having regard to the previous low quotation of 68-72, due probably to there being very few transactions in this stock. The rise in the quotations of three of the Primitiva debentures will be of interest—coinciding as it does with the issue of the report and accounts for the year 1923 showing the writing-off of the huge deficit on the revenue account by the reduction, in accordance with the resolution passed at the meeting in February last, of the preference capital by £500,000, and the ordinary capital by £1,160,356.

The following transactions were recorded during the week:

On Monday, Aldershot "C" 82, Alliance and Dublin 66, Bombay 5⅛, 5⅛, Bournemouth "B" 12 11/16, 12¾, Brentford 4 p.ct. debenture 78½, 78¼, Brighton and Hove 174½, Continental Union 39, European 8, Gas Light and Coke 94, 94⅛, 94⅜, 3½ p.ct. maximum 62, 4 p.ct. preference 80½, 80⅜, Imperial Continental 174, 176, Primitiva 8s. 9d., 9s., 9s. 1½d., 9s. 3d., 9s. 4½d., 9s. 6d., 9s. 9d., South Metropolitan 99¼, 99⅜, 100, 3 p.ct. debenture 62½, 63 p.ct. debenture 102, South Suburban 5 p.ct. 105, 106, Wandsworth "C" 97. Supplementary prices, Brentford 6 p.ct. mortgages 99, Wandsworth 3½ p.ct. new 97.

On Tuesday, Alliance and Dublin 64, 65, 65½, Brentford "B" 112, British 117½, Commercial 4 p.ct. 93⅜, 94, Continental Union 7 p.ct. preference 93, Gas Light and Coke 93⅝, 93⅜, 94, 94½, 4 p.ct. preference 80½, 3 p.ct. debenture 60½, 61, 61½, Imperial Continental 174½, 176, Primitiva 9s. 3d., 9s. 4½d., 9s. 6d., South Metropolitan 99½, 99½, 100, 3 p.ct. debenture 60½, 60⅝, 61½, 63 p.ct. debenture 102, 103, South Suburban 5 p.ct. 106, 106½. Supplementary prices, Brentford 7½ p.ct. mortgages 104½, 105½, Wandsworth 3½ p.ct. new 99.

On Wednesday, Alliance and Dublin 65½, 66, Bombay 5⅜, 5⅝, 5½, Commercial 4 p.ct. 94, Gas Light and Coke 93½, 94, 94⅛, 3½ p.ct. maximum 63, 4 p.ct. preference 80, 80½, 3 p.ct. debenture 61, 61½, Imperial Continental 176, Primitiva 9s. 3d., 9s. 4½d., 9s. 6d., 9s. 6¾d., 9s. 7½d., 9s. 9d., 9s. 10½d., Sheffield "A" 102½, South Metropolitan 99½, 99⅜, 100, 3 p.ct. debenture 61½, South Suburban 5 p.ct. 106½, Swansea 6½ p.ct. debenture 103½, 103¾.

On Thursday, Bombay 5 1/16 *ex* div., Brentford "A" 112½, 113, 113¾, "B" 112, 112 3/16, 113, 113¼, European 8⅛, 8⅜, Gas Light and Coke 93¾, 94, 94⅛, 3½ p.ct. maximum 63, 63½, 3 p.ct. debenture 60¾, Montevideo 58, 58½, Primitiva 9s. 7½d., 9s. 9d., 9s. 10½d., 10s., South Metropolitan 99⅞, 100, 6½ p.ct. debenture 102¾, South Suburban 107, 108, Tottenham "B" 100½. Supplementary prices, Oxford 5 p.ct. debenture 98¾, Pinner 6 p.ct. preference 5 5/16.

On Friday, Brentford "B" 112, Cape Town 7 3/16, 7½, Commercial 4 p.ct. 94, European 8, Gas Light and Coke 93½, 93⅝, 94⅛, 94⅜, 3½ p.ct. maximum 62, Imperial Continental 173¾, 174, 174½, 176, Oriental 102, Primitiva 9s. 7½d., 9s. 9d., 10s., South Metropolitan 99⅛, 99⅜, South Suburban 5 p.ct. 106½, Tottenham "B" 101. Supplementary prices, Aldershot 4 p.ct. debenture 75.

Money Market conditions were in contrast to the previous week. Funds were in abundant supply at the end of the week, and were obtainable at as low as 2 p.ct. There was consequently an easier tendency in the discount market, which was also affected by the lower average rate at which Treasury Bills were allotted—viz., £3 14s. 3·74d. p.ct.

The Foreign Exchange market was uneventful. At the end of the week there was a further setback in sterling on New York, the rate closing at 4.49⅜. The Paris cheque showed slight fluctuations, closing at 86.12½. The Brussels rate was steady at 93.70, and Italian lire rose to 103.75. Neutral exchanges showed little change.

Silver was better on Chinese support, the price closing 7/16d. higher at 35 7/16d., but there was very little business.

The Bank rate is 4 p.ct., to which it was raised from 3 p.ct. on July 5, 1923. Bankers' deposit rates are 2 p.ct. The deposit rates of discount houses are 2 p.ct. at call and 2½ p.ct. at notice.

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf.Yr.	Dividends. Last Hf. Yr.	NAME.	Quotations. Oct. 24.	Rise + or Fall − on Week.	Transactions Lowest and Highest Prices.
£			% p.a.	% p.a.				
171,978	Stk.	Aug. 14	5	5	Aldershot 5 p.c. max. C.	80—83	..	82
235,492	,,	,,	4	4	Do. 4 p.c. Pref.	72—77	+4½	..
1,551,868	,,	Sept. 25	6	6½	Alliance & Dublin Ord.	61—66	..	64—66
374,000	,,	July 10	4	4	Do. 4 p.c. Deb.	63—68	..	..
300,000	5	Oct. 23	8	8	Bombay, Ltd.	5—5⅛*	..	5 1/16—5⅛
100,000	10	Aug. 14	8½	8½	Bournemouth 5 p.c.	12½—13¼	..	..
383,110	10	,,	7	7	Do. B 7 p.c.	12½—13	..	12 11/16—12¾
150,000	10	,,	6	6	Do. Pref. 6 p.c.	10¾—11½	..	..
50,000	Stk.	June 26	3	3	Do. 3 p.c. Deb.	54—59	..	..
162,025	,,	,,	4	4	Do. 4 p.c. Deb.	74—79	..	..
992,045	,,	July 10	6 7/10	6 7/10	Brentford A Con.	110—115	..	112½—113¼
990,500	,,	,,	6⅝	6⅝	Do. B New	110—115	..	112—113¼
76,000	,,	,,	5	5	Do. 5 p.c. Pref.	87—92	..	..
306,690	,,	June 12	4	4	Do. 4 p.c. Deb.	75—80	..	78½—78¾
181,337	,,	,,	—	6	Do. 6 p.c. Rich. Red. Deb.	100—105	..	..
214,740	,,	Aug. 28	11½	11½	Brighton & Hove Orig.	170—175	..	174½
244,200	,,	,,	8½	8½	Do. A Ord.	125—128	..	..
1,287,500	,,	July 24	5	5	Bristol 5 p.c. max.	91—92a	..	..
855,000	,,	Sept. 25	7	8	British Ord.	115—120	..	117½
100,000	,,	June 26	7	7	Do. 7 p.c. Pref.	118—123	..	..
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb.	72—77	..	..
100,000	10	May 22	6	8	Cape Town, Ltd.	6½—7½	..	7 3/16—7½
100,000	10	Apr. 24	4½	4½	Do. 4½ p.c. Pref.	6—7	..	..
150,000	Stk.	June 26	4½	4½	Do. 4½ p.c. Deb.	71—76	..	..
626,860	,,	July 24	6	6	Cardiff Con. Ord.	97—100	..	..
237,860	,,	June 26	7½	7½	Do. 7½ p.c. Red. Deb.	103—106	..	..
157,150	,,	Aug. 14	6½	5	Chester 5 p.c. Ord.	86—91b	..	..
1,513,280	,,	July 24	6	6	Commercial 4 p.c. Cap.	91—94	..	93¼—94
560,000	,,	,,	6	6	Do. 3½ p.c. Cap.	91—94	..	..
475,000	,,	June 12	3	3	Do. 3 p.c. Deb.	56—59	..	..
800,000	,,	14 Jan. 15	—	—	Continental Union, Ltd.	38—43	..	39
200,000	,,	June 12	7	7	Do. 7 p.c. Pref.	87—92	..	93
660,000	,,	Aug. 28	6½	6½	Croydon sliding scale	100—103	..	..
284,975	,,	,,	5	5	Do. max. div.	84—87	..	..
492,270	,,	Aug. 28	9	6	Derby Con.	107—110	..	..
55,000	,,	July 10	4	4	Do. Deb.	74—76c	..	..
209,000	,,	Oct. 9	5	5	East Hull 5 p.c. max.	—	..	..
1,002,180	10	July 24	2	6	European, Ltd.	7½—8½	..	8—8⅛
16,503,045	Stk.	Aug. 14	5⅜	5⅜	Gas Light & Coke 4 p.c. Ord.	93¼—95½	−½	93¼—94⅜
2,600,000	,,	,,	3½	3½	Do. 3½ p.c. max.	61—64	..	62—63¼
4,062,235	,,	,,	4	4	Do. 4 p.c. Con. Pref.	78—81	..	80—80⅜
4,761,930	,,	June 12	3	3	Do. 3 p.c. Con. Deb.	60—63	..	60½—61¾
130,000	,,	—	10	10	Do. 10 p.c. Ilford Deb.	..	..	..
42,000	,,	—	7½	7½	Do. 7½ p.c. Ilford Deb.	..	..	..
82,500	,,	Sept. 11	6½	6½	Hastings & St. L. 5 p.c. Conv.	95—100	..	..
258,740	,,	,,	5½	5½	Do. 3½ p.c. Conv.	75—80	..	..
70,000	10	Sept. 25	10	10	Hongkong & China, Ltd.	15½—16½	..	..
86,600	Stk.	Aug. 14	10	10	Hornsey 7 p.c.	138—143	..	..
1,976,000	,,	May 22	10	30	Imperial Continental Cap.	172—177	..	173¼—176
263,950	,,	Aug. 14	3½	3½	Do. 3½ p.c. Red. Deb.	68—71	..	..
235,242	,,	Aug. 14	6½	6½	Lea Bridge 5 p.c. Ord.	95—100	..	..
2,127,340	,,	Aug. 14	5½	5½	Liverpool 5 p.c. Ord.	91—92b	..	..
600,000	,,	Sept. 25	7	7	Do. 7 p.c. Red. Pref.	102—105b	..	..
165,736	,,	Aug. 28	8	9	Maidstone 5 p.c. Cap.	120—125	..	..
63,480	,,	June 26	3	3	Do. 3 p.c. Deb.	53—58	..	..
75,000	5	,,	5	7	Malta & Mediterranean	3¼—3½	..	..
541,920	Stk.	June 12	4	4	Montevideo, Ltd.	55—60	..	58—58½
1,875,892	,,	July 24	5½	5	Newcastle & Gateshead Con.	82½—83½d	..	..
230,166	,,	,,	4	4	Do. 4 p.c. Pref.	74—75d	..	..
529,705	,,	June 26	3½	3½	Do. 3½ p.c. Deb.	69—71d	−1	70
15,000	10	Aug. 28	11	11	North Middlesex 10 p.c.	15½—16½	..	..
75,940	10	,,	7 7/10	7 7/10	Do. 7 p.c.	11½—11¾	..	..
300,000	Stk.	May 8	9	7	Oriental, Ltd.	99—102	..	102
138,120	,,	June 26	7¼	7½	Plym'th & Ston'house 5 p.c.	112—117	..	..
60,000	50	Aug. 28	13	13	Portsea Island B	99—102	..	..
100,000	50	,,	12	12	Do. C	95—100	..	..
2,289,909	1	—	—	—	Primitiva Ord.	9/6—10/6	..	8/9—10/0
341,400	100	June 2	4	4	Do. 4 p.c. Red. Deb.	76—79	..	..
600,000	Stk.	July 24	4	4	Do. 4 p.c. Red. Deb. 1911	55—60	+3	..
220,335	,,	June 26	4	4	Do. B. Aires 4 p.c. Rd. Db.	55—60	+2	..
321,670	,,	,,	4	4	Do. R'r P'te 4 p.c. Rd. Db.	55—60	+2	..
150,000	10	Sept. 25	6	6	San Paulo 6 p.c. Pref.	6½—7½	..	..
125,000	50	July 1	5	5	Do. 5 p.c. Red. Deb.	41—43	..	..
270,000	Stk.	Aug. 28	5 5/8/4	5½	Sheffield A	101—103e	..	102½
419,968	,,	,,	5 5/8/4	5½	Do. B	101—103e	..	..
1,047,000	,,	,,	5 5/8/4	5½	Do. C	101—103e	..	..
90,000	10	Oct. 23	6	8	South African	7—9*	..	..
6,609,895	Stk.	Aug. 14	6½	5	South Met. Ord.	98½—100½	..	99½—100
102,580	,,	July 10	5	5	Do. Red Pref.	98—100	+2	..
1,895,445	,,	,,	3	3	Do. 3 p.c. Deb.	59—62	..	60½—61½
734,000	,,	Sept. 11	6½	6½	Do. 6½ p.c. Red. Deb.	103—105	+2	102—103
91,500	,,	Aug. 28	8½	8½	South Shields Con.	134—136d	..	..
1,087,795	,,	Aug. 14	6½	6½	South Suburban Ord. 5 p.c.	105—108	..	105—108
368,837	,,	June 26	5	5	Do. 5 p.c. Deb.	93—98	..	..
647,740	,,	May 8	3	3	South'mpt'n Ord. 5 p.c. max.	85—88	..	..
121,275	,,	June 26	4	4	Do. 4 p.c. Deb.	73—78	..	..
250,000	,,	Aug. 28	7	7	Swansea 7 p.c. Red. Pref.	101½—103½	..	..
200,000	,,	June 26	6½	6½	Do. 6½ p.c. Red. Deb.	102—104	..	103¼—103½
120,000	,,	July 24	8	8	Tottenham District A 5 p.c.	116—119	..	..
982,275	,,	,,	6½	6½	Do. B 3½ p.c.	99—102	..	100½—101
181,255	,,	June 12	4	4	Do. 4 p.c. Deb.	76—80	..	..
258,251	,,	Aug. 28	7/14/4	5	Tynemouth Con. and New	84—86d	..	..
					Wandsworth, Wimbledon, and Epsom—			
30,000	,,	July 10	9½	9½	Wandsworth A 5 p.c.	135—140	..	..
255,636	,,	,,	7½	7½	Do. B 3½ p.c.	113—118	..	..
108,075	,,	,,	6/7/9	6/9/6	Do. C	96—101	..	97
240,865	,,	,,	6/7/9	6/9/6	New Ordinary	..	..	97—99
352,000	,,	,,	7½	7½	Wimbledon 5 p.c.	110—115	..	..
98,000	,,	,,	7½	7½	Epsom 5 p.c.	115—120	..	..
88,416	,,	June 26	3	3	3 p.c. Deb.	55—60	..	..

Quotations at:—*a.*—Bristol, *b.*—Liverpool, *c.*—Nottingham, *d.*—Newcastle, *e.*—Sheffield. * Ex; div.

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *Oct.* 27.

In the London tar products market there is a firmer tendency as regards pitch, although little business is reported. The price is something over 50s. per ton. Creosote is a steady market at from 6½d. to 6¾d. per gallon net and naked. Pure toluole is about 1s. 9d. per gallon, pure benzole 1s. 7d. per gallon, and 95/160 solvent naphtha 1s. 6d. per gallon. Other products are without material change.

Tar Products in the Provinces.

Oct. 27.

The markets for tar products remain quiet. Pitch continues with a firmer tone; but there does not appear to be very much business doing, and Continental pitch is being offered in fair quantities at under 50s. per ton delivered to the consumers' works in the North of France. There is no alteration in the price of creosote. Water-white products are steadier, and there has been some improvement in the market for solvent naphtha. The remaining tar products are still very dull, with little or no business doing.

The average values for gas-works products during last week were: Gas-works coal tar, 26s. 9d. to 31s. 9d. Pitch, East Coast, 42s. 6d. to 45s. f.o.b. West Coast—Manchester, 37s. 6d. to 40s.; Liverpool, 38s. 6d. to 41s.; Clyde, 41s. to 42s. Benzole 90 p.ct., North, 1s. 2d. to 1s. 3d.; crude 65 p.ct. at 120° C., 9d. to 10d. naked at makers' works; 50-90 p.ct., naked, North, 1s. 2d. to 1s. 3d. Toluole, naked, North, 1s. 2d. to 1s. 3d., nominal. Coal tar crude naphtha in bulk, North, 7d. to 7¼d. Solvent naphtha, naked, North, 1s. 1½d. to 1s. 2½d. Heavy naphtha, North, 1s. to 1s. 1d. Creosote, in bulk, North, liquid, 5d. to 5¼d.; salty, 4⅞d. to 5d.; Scotland, 5d. to 5⅛d. Heavy oils, in bulk, North, 7d. to 7¼d. Carbolic acid, 60 p.ct., 1s. 7½d. to 1s. 8½d. prompt. Naphthalene, £13 to £15; salts, £5 to £7, bags included. Anthracene, "A" quality, 4d. per minimum 40 p.ct., purely nominal; "B" unsaleable.

British Gas Light Company.

Last week a whist tournament and concert in connection with the Cricket and Bowling Clubs and St. John Ambulance Brigade were held at the Hull Station of the Company. The Engineer and Manager (Mr. Harold E. Copp, M.Inst.C.E.) presided, and was supported by Mr. E. A. Harman, M.Inst.C.E., Mr. F. C. Robinson, Mr. E. S. Benson, and the various officials of the clubs. The cups, medals, and prizes were presented by Mrs. Copp. The whist tournament was followed by an entertainment given by the Hull Police Concert Party, which was greatly enjoyed. Mr. Ronald Dally, B.Sc., also contributed a pianoforte solo which was much appreciated. A pleasing feature of the evening was the presentation to Mr. C. Applebee of a case of cutlery on the occasion of his twenty-first anniversary as Secretary of the Cricket Club. Mr. Copp, in making the presentation, said they all appreciated the splendid work he had done during the period he had acted as Secretary of the Club.

York Town and Blackwater Capital Issue.—Messrs. A. & W. Richards, of No. 37, Walbrook, advertise the sale by tender by them, on instructions from the Directors, of an issue of £10,000 of 5½ p.ct. perpetual debenture stock and 1000 £10 new ordinary additional shares. The minimum price for the debenture stock is par, and for the ordinary capital £12 per share, at which the yield on the ordinary shares (subject to the sliding-scale, and now receiving 8⅜ p.ct.) will be £7 5s. 10d. p.ct. Tenders must be sent in to the firm by Thursday morning, Nov. 6.

Dalkey (Co. Dublin) Gas Supply.—At the Dalkey District Court, the local Urban Council opposed an Order sought by the Alliance and Dublin Consumers' Gas Company for permission to lay a new high-pressure trunk main through the town, underneath the footpath instead of the roadway. Mr. Lardner, K.C., for the Company, said the main was to run from Ringsend, Dublin, to Bray, co. Wicklow; and the request was made because it was considered dangerous to put a high-pressure main under the tramway lines. The Council's objection was because of danger of leakage. The Court granted the Order on condition that the main was laid 3 in. from the surface, immediately under the footpath, the joints of the pipes to be encased in concrete, and the pipes to be over all service pipes going into the houses in the streets.

Further Reduction at Walton-on-Thames.—Notice is given by the Walton-on-Thames and Weybridge Gas Company that the price of gas supplied by ordinary meter to private consumers is being further reduced from 1s. 2d. to 1s. 1d. per therm, as from the Michaelmas quarter meter readings. This reduction of 1d. per therm is equivalent to 4½d. per 1000 c.ft.

Sligo Gas Charge.—The Irish Free State Minister of Industry and Commerce has refused the request of the Sligo Corporation for an inquiry into the affairs of the Sligo Gas Light Company with reference to an alleged overcharge for gas. The Corporation have now referred the matter to the gas consumers, so that they may take action if they believe they have a grievance.

Over-Subscription of Aldershot Preference Stock.—The issue of £60,000 of 4 p.ct. preference stock in the Aldershot Gas, Water, and District Lighting Company which was offered to tender by Messrs. A. & W. Richards has been largely over-subscribed, the tenders sent in amounting to £107,835, and ranging from £76 down to the minimum of £70. The average price of allotment was £72 10s. 4d. p.ct.

"Underground London."—The next meeting of the Society of Engineers will be held in the Apartments of the Geological Society, Burlington House, W., on Monday, Nov. 3. The proceedings will open at 5 o'clock with a social gathering of members and visitors, after which a paper, illustrated by lantern slides, entitled "Underground London," will be read by Mr. W. J. Liberty, City of London Public Lighting Superintendent.

Additional Plant at Leicester.—The Gas Committee recommends the Leicester City Council to approve the purchase of additional plant estimated to cost £183,363, at the Aylestone Road Works. During the twelve months ended Sept. 30 the output of gas was in excess of the output for the corresponding period of last year by 9 p.ct. The maximum daily load reached upwards of 11 million c.ft., which necessitated the carburetted water gas plant being brought into use. The proposed expenditure forms part of the £900,000 authorized to be borrowed under the provisions of the Leicester Corporation Act, 1921. The Committee believe an extension of the plant is at once necessary, and, subject to the approval of the Council, have accepted the lowest tender for a vertical retort plant—that of West's Gas Improvement Company, of Manchester, at £88,652.

Keighley Gas Department.—The Keighley Gas Committee report that for the year ended June 30 there was a net profit of £16,632, the gross profit being £22,289. The Committee recommend that £3540—the estimated cost of public lighting—be transferred to relief of the general district rate; that £2991 be put to working capital account; £6500 be transferred to reserve and renewals account; that a donation of £100 be given to the Keighley Victoria Hospital; and that £3500 be applied to relief of rates for the ensuing year—the equivalent of about 4d. in the pound. The Committee also recommend a reduction in the price of gas, from Jan. 1 next, both inside and outside the borough, by 2d. per 1000 c.ft. through ordinary meters and 3d. per 1000 c.ft. through prepayment meters, and that the rebate to prepayment consumers who paid a meter rent of 2s. 6d. per half-year be discontinued. The present price of gas is 2s. 11d. by ordinary meter.

Liskeard Gas Undertaking.—The Liskeard Town Council have received a report of the Special Committee appointed to consider the offers of undertakings for public lighting in the borough. The Committee considered the Liskeard Gas Company offered the best terms; but as acceptance of those terms would involve a monopoly in lighting, they advised that the door be left open for the possibility of the ultimate acquisition of the undertaking by the Town Council. When the Committee approached the Gas Company on the subject, the Directors replied that they would be very pleased to recommend to their shareholders the sale of the undertaking to the borough, and that the present was a favourable opportunity, as the works had been modernized and were in good order. When the Company were asked to state terms, the Directors said they could not name a definite figure without going into matters thoroughly and obtaining an expert valuation. They suggested that the Committee should first obtain definite authority from the Council to treat with them. After the Mayor (Mr. W. F. Young) had stated that he did not see how the Council could carry the matter much further at the moment, the report was referred to the General Purposes Committee to consider after the November election.

Since the beginning of 1922, the Blackpool Gas Department have added nearly 3000 new consumers to their books. During 1923, the new consumers numbered 902; for the first nine months of 1924, the total was 1051.

NOTICES TO CORRESPONDENTS, ADVERTISERS, AND SUBSCRIBERS.

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(GAS DEPARTMENT.)

APPLICATIONS are invited for the Appointment of ENGINEER and MANAGER of the Gas-Works belonging to the above Council. Commencing salary, £450 per Annum.
Candidates must be practical Engineers and Draughtsmen and able to Manage and Control the Staffs and Workmen in the Department.
Applications, endorsed "Gas," stating Age, Experience, full Particulars of Practical and Technical Training, and *copies* of Three Recent Testimonials, to be sent to the undersigned on or before Tuesday, the 11th day of November, 1924.
J. W. BOOTH,
Clerk to the Council.
Town Hall,
Oswaldtwistle,
Lancashire,
Oct. 25, 1924.

GAS Company in a Home County requires the services of a capable ENGINEER to take charge of Gas-Works and Distribution. Annual output about 40 millions. Write, stating Age, Experience, and Salary required (Testimonials not required in first instance), and date when able to begin, to Box 638, care of JUDDS, 81, Gresham Street, E.C.
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(GAS DEPARTMENT.)

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Preference will be given to Applicant holding full Technological Certificate of the City and Guilds of London Institute. Salary, £450 per Annum.
Applications, stating Age, Experience, and Training, along with *copies* of not more than three recent Testimonials, to be lodged with the undersigned on or before Nov. 11, endorsed "Distribution Superintendent."
Further Particulars can be obtained from the Engineer and Manager, 15, Calton Hill.
ANDREW GRIERSON, S.S.C.,
Town Clerk.
City Chambers,
Edinburgh,
Oct. 22, 1924.

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H. ROTHWELL,
Town Clerk.
Town Clerk's Office,
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(GAS DEPARTMENT.)

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